



ATTACHMENTS TO REPORT:

**PS01-11/24 - CONSIDERATION OF PRECINCT 8 - RANCH
ROAD LOCAL STRUCTURE PLAN FOLLOWING
ADVERTISING**

ORDINARY COUNCIL MEETING

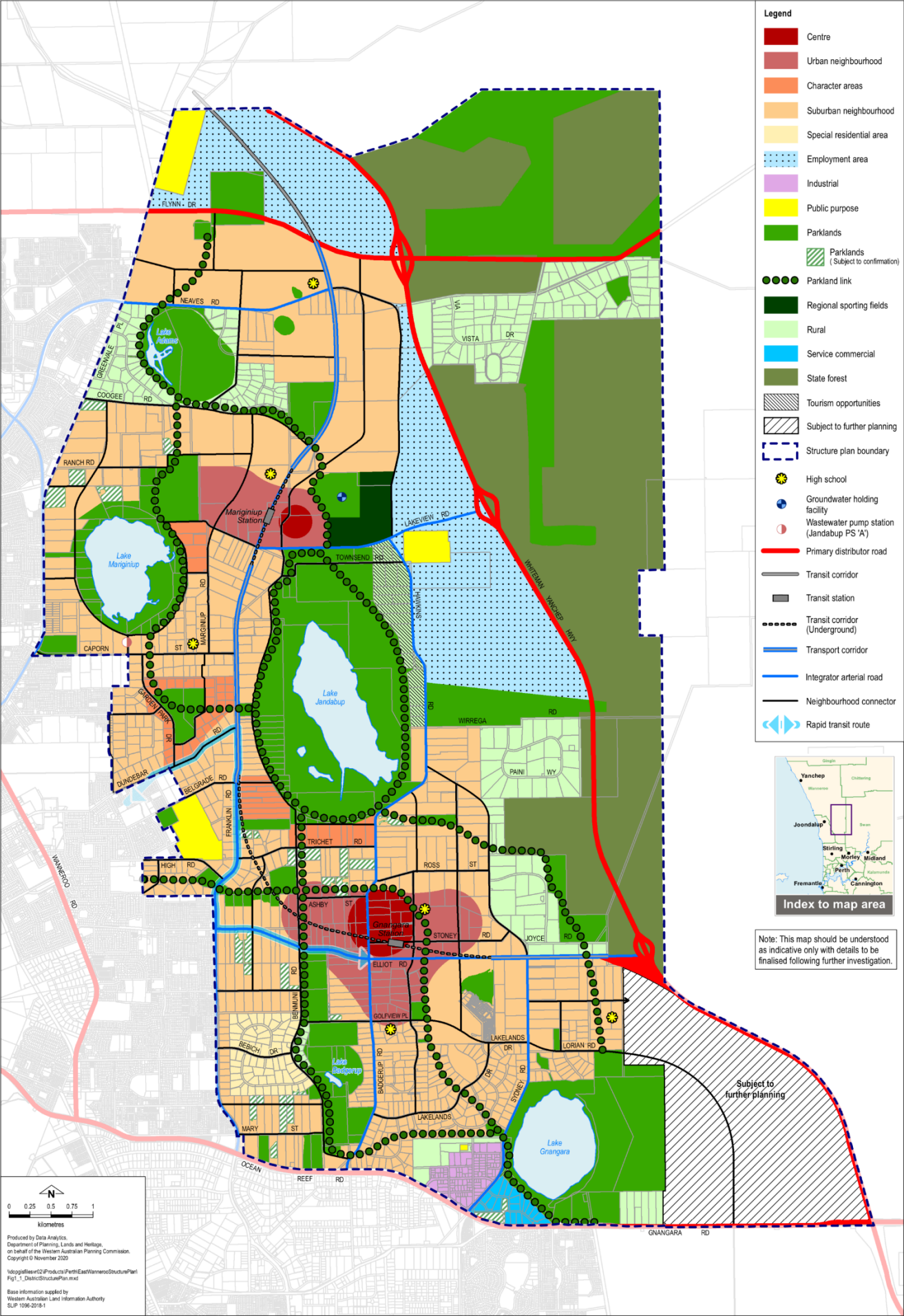
to be held at
the Council Chamber (Level 1), Civic Centre,
23 Dundobar Road, Wanneroo
on 12 November 2024 commencing at 6:00PM

1 APPROVAL SERVICES

PS01-11/24 Consideration of Precinct 8 - Ranch Road Local Structure Plan Following Advertising

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Figure 1.1 East Wanneroo District Structure Plan



East Wanneroo District Structure Plan

Precinct 8, Ranch Road East Wanneroo Local Structure Plan

Various Lots, Mariginiup



OUR REF: 8903_IND02A





Document Control

Printed 09 April 2024
8903_IND02A_20240404_Precinct 8, Ranch Road East Wanneroo Local Structure Plan.indd

Version	File Name	Prepared	Approved	Date
1	8903_2024Jan_Draft LSP_R_cg	Christopher Green	Rod Dixon	09/04/2024

This report has been authorised by;



Rod Dixon
Director



Christopher Green
Principal Planner



Jamie Baxter
Quality Control



CONTACT ROWE GROUP

p 9221 1991 e info@rowegroup.com.au w rowegroup.com.au
a 3/369 Newcastle Street, Northbridge 6003

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Record of Endorsement

This structure plan is prepared under the provisions of the City/Shire/Town of [NAME] Local Planning Scheme [NUMBER].

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

..... Date

Signed for and on behalf of the Western Australian Planning Commission:

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

..... Witness

..... Date

..... Date of Expiry

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date Approved by WAPC

Table of Density Plans

Density Plan No.	Area of density plan application	Date Endorsed by WAPC

Executive Summary

This Local Structure Plan has been prepared by Rowe Group on behalf of landowners within East Wanneroo District Structure Plan (WAPC, 2021) 'Precinct 8 – Ranch Road', as coordinated by Qube Property Group. The Structure Plan seeks to facilitate the development of 'Precinct 8 - Ranch Road' ('Precinct 8' or 'the subject land') and covers an area of 262 hectares, bounded by Coogee Road, Pinjar Road, Mornington Drive and Mariginiup Lake.

Land within this Local Structure Plan (LSP) area is predominately zoned 'Urban Deferred' under the Metropolitan Region Scheme (MRS) and is the subject of request to lift the urban deferment and transfer the land to the 'Urban' zone.

The subject land is located approximately 27km north of Perth, and 1.5km east of the Banksia Grove neighbourhood centre. Land within the Structure Plan is predominately used for rural living with several market gardens also present. Approximately one third of the Structure Plan area is reserved for 'Parks and Recreation' with these reserves containing the wetland areas and foreshores of Mariginiup Lake and Little Mariginiup Lake.

The Precinct 8 – Ranch Road Local Structure Plan area forms part of the broader East Wanneroo area, which has long been earmarked by the State Government for urban development. The area is identified within both the Western Australian Planning Commission (WAPC) *Perth and Peel @3.5Million* Sub-Regional Planning Framework (WAPC, 2018) and in greater detail within the *East Wanneroo District Structure Plan* (EWDSP) (WAPC, 2021). The EWDSP sets out a vision for the wider East Wanneroo urban expansion area, with Precinct 8 being one of some eighteen precincts identified for land use change and development over time. Precinct 8 – Ranch Road is recognised in the EWDSP as a 'suburban neighbourhood' of approximately 2,300 lots and is identified for development as part of Stage 1 of the DSP, which notes that *'Precinct 8 is capable of being developed in the short term'*.

This Precinct 8 Local Structure Plan responds to key considerations identified by the EWDSP and seeks to facilitate the urban development of the precinct in accordance with the following objectives:

- a) Create a distinct suburban neighbourhood that retains celebrates the sites natural features by sensitively connecting residential areas with the surrounding wetlands and bushland areas.
- b) Enhance connectivity between Mariginiup Lake, Little Mariginiup Lake and Lake Adams.
- c) Provide an efficient and environmentally responsive urban layout that maintains topography and natural drainage flows whilst maximising accessibility and opportunities for energy efficiency at the lot level through solar gain.
- d) Create a walkable neighbourhood with attractive and convenient connections between residential and non-residential land uses and maximising accessibility to public open space (POS) by ensuring the equitable distribution of POS throughout the Structure Plan area.
- e) Satisfy the EWDSP dwelling target of 2,300 lots for Precinct 8 and provide a range of residential lot typologies consistent with 'suburban neighbourhood' character identified by the EWDSP.
- f) Provide for the coordinated delivery of infrastructure and community services alongside development.
- g) Minimise the potential harm arising from natural hazards including bushfire, heatwaves and groundwater inundation.

This Structure Plan has been prepared in consultation with the City of Wanneroo and the Department of Planning Lands and Heritage and in accordance with the requirements of the City's District Planning Scheme No.2, the EWDSP, the Planning and Development (Local Planning Schemes) Regulations 2015 and the WAPC's *Guidance for Structure Plans*.

Structure Plan Summary

Item	Data	Section number referenced in Part 2 of report
Total area covered by the Structure Plan	261.96 hectares	
Area of each land use proposed:		
Residential	97.25 hectares	5
Primary School Site	3.5 hectares	5.2.2
Total estimated lot yield	2,500 lots	6.7
Estimated number of dwellings	2,500 dwellings	5.2.1
Estimated residential site density	25.7 dwellings per site hectare	
Estimated population*	7,000 people	
Estimated commercial floor space	nil	
Estimated area and percentage of public open space given over to:		
▪ Regional Reserves	93.67 hectares	6.3
▪ Parkland subject to confirmation	1.17 hectares	
▪ Public Open Space	19.45 hectares, 12.31%	
Estimate percentage of natural area	96.57 hectares, 37%	

Note: All information and areas are approximate only and are subject to survey and detailed design.

** Based on City of Wanneroo average number of people per household of 2.8 ABS 2021 Census*

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Technical appendices

Appendix Number	Document Title	Nature of Document	Referral/ Approval Agency	Approval status and Modifications
1	Environmental Assessment Report	Supporting		
2	Civil Servicing Report	Supporting		
3	Local Water Management Strategy	Approval Required	City of Wanneroo, Department of Water and Environmental Regulation	
4	Transport Impact Assessment	Approval Required	City of Wanneroo, Main Roads WA	
5	Bushfire Management Plan	Approval Required	City of Wanneroo	
6	Aboriginal Cultural Heritage	Supporting		
7	Landscape Strategy	Supporting		
8	Wetland Buffer and Foreshore Strategy	Supporting		
9	Sense of Place Statement	Supporting		
10	WAPC Approval to Prepare Concurrent Structure Plan	Supporting		

Part One Implementation



1. Structure Plan Area and Operation

This Structure Plan applies to the various lots contained within the Precinct 8 -Ranch Road area of the East Wimmeroo District Structure Plan (EWDSP), being the land bound by Pinjar Road, Mornington Drive, Coogee Road, Mariginiup Road and Mariginiup Lake. The Structure Plan applies to all the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map.

Refer to **Plan 1 – Structure Plan Map**.

1.1. Structure Plan Content

This Structure Plan comprises the following sections:

- a) **Part One – Implementation;** includes the Structure Plan (Plan 1) and outlines the requirements that will be applied when assessing subdivision and development applications over the land to which the Structure Plan relates.
- b) **Part Two – Explanatory Section;** is to support the Structure Plan contained in Part One by providing the background and explanatory information used to prepare the Structure Plan.
- c) **Technical Appendices;** contains all technical and specialist reports prepared in support of the Structure Plan.

1.2. Structure Plan Operation

In accordance with Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (Regulations)*, this Structure Plan shall come into operation when it is approved by the Western Australia Planning Commission (WAPC) pursuant to Schedule 2, Part 4, Clause 22 of the Regulations.

Pursuant to clause 27(1) of Schedule 2 of the Regulations:

A decision-maker for an application for development approval or subdivision approval in an area covered by a structure plan that has been approved by the Commission is to have due regard to, but is not bound by, the structure plan when deciding the application.

Pursuant to clause 28(1) of Schedule 2 of the Regulations, this Structure Plan has effect for a period of 10 years, commencing on the day the WAPC approves the plan.

The operation of the Structure Plan shall be in accordance with the City of Wimmeroo District Planning Scheme No. 2 (DPS 2) and the Planning and Development (Local Planning Schemes) Regulations 2015 ('the Regulations').

2. Purpose

The Structure Plan seeks to facilitate the development of Precinct 8 in accordance with the following vision:

Precinct 8, Ranch Road will be a distinctive suburban neighbourhood, with celebrated wetlands and areas of bushlands providing an attractive lifestyle.

To achieve this vision, the Structure Plan sets out a development management framework that seeks to satisfy the following objectives:

- a) Create a distinct suburban neighbourhood that protects and celebrates natural features whilst sensitively connecting residential areas with the surrounding wetlands and bushland areas.
- b) Enhance connectivity between Mariginiup Lake, Little Mariginiup Lake and Lake Adams.
- c) Provide an efficient and environmentally responsive urban layout that maintains topography and natural drainage flows whilst maximising accessibility and opportunities for energy efficiency at the lot level through solar gain.
- d) Create a walkable neighbourhood with attractive and convenient connections between residential and non-residential land uses and maximising accessibility to public open space (POS) by ensuring the equitable distribution of public open space (POS) throughout the Structure Plan area.
- e) Satisfy the EWDSP dwelling target of 2,300 lots for Precinct 8 and provide a range of residential lot typologies consistent with 'suburban neighbourhood' character identified by the EWDSP.
- f) Provide for the coordinated delivery of infrastructure and community services alongside development.
- g) Minimise the potential harm arising from natural hazards including bushfire, heatwaves and groundwater inundation.

3. Staging

The staged development of the Structure Plan area is anticipated to begin in 2025, with the development front moving progressively inwards from the sites western and northern boundaries. Development is anticipated to occur at a rate of approximately 250 lots per annum (subject to market demand).

4. Subdivision & Development Requirements

Plan 1 – Structure Plan Map designates the land uses, zones and reserves applicable to the Structure Plan area. Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under the City of Wanneroo DPS2.

4.1. Land Use Zones and Reserves

4.1.1. Residential Zone

Subdivision and development of the land is to be undertaken in accordance with the Plan 1 - Structure Plan Map and the residential densities as outlined in Part 2.

A Residential Density Code Plan is to be approved at the time of subdivision.

4.1.2. Road Reserves

Road reserves are to be provided within the Structure Plan area generally in accordance with Plan 1 – Structure Plan Map, with cross-sections generally in accordance with the WAPC's *Liveable Neighbourhoods* operational policy requirements. Road reserves will be landscaped in a manner generally consistent with the street cross-sections set out in the Landscaping Masterplan.

Refer to **Plan 1 – Structure Plan Map, Figure 14 - Proposed Road Network**, and **Appendix 7 Landscape Masterplan**.

4.1.3. Public Open Space

The Structure Plan is to provide a minimum 10 per cent of the gross subdivisible area as public open space, in accordance with the WAPC's *Liveable Neighbourhoods* requirements.

Public open space is to be provided generally in accordance with the Plan 1 - Structure Plan Map.

4.2. Density and Development

4.2.1. Density and R-Codes

Plan 1 – Structure Plan Map designates the residential density code ranges that apply within the Structure Plan area. Subdivision and development within the Structure Plan area is to be in accordance with a Residential Density Code Plan, to be approved at the time of subdivision.

The Residential Density Code Plan shall be consistent with the residential density ranges identified on Plan 1 and the locational criteria contained in clause 4.2.2.

4.2.2. Locational Criteria

Acknowledging *Liveable Neighbourhoods* and *Perth and Peel @3.5Million* density targets for Perth and Peel, subdivision and development within the Structure Plan area shall have regard for a targeted average of 22 dwellings per site hectare and 15 dwellings per grow urban hectare. Locational considerations and market demand shall be considered in applying densities within the Structure Plan area at the time of subdivision.

The allocation of residential densities shall be in accordance with the following criteria:

- a) R30 shall generally apply as the base density code throughout the Structure Plan area.
- b) R40-60 may be applied to residential lots with one or more of the following characteristics:
 - i. Located within close proximity (approximately 200m) of public open space, or
 - ii. Located at the end of street blocks to create a diverse streetscape and desired built-form character.

4.2.3. Residential Density Code Plan

A Residential Density Code Plan shall be submitted at the time of application for subdivision. The Plan will allocate Density Codes for proposed residential street blocks and /or residential lots as the case requires. Once approved by the WAPC, the Residential Density Code Plan shall form part of the Structure Plan.

Where a revised Residential Density Code Plan is submitted with subsequent subdivision applications, it shall indicate the following:

- a) The allocation of specific residential density codes to the proposed lots;
- b) Residential density codes already designated to the previously approved lots (where applicable); and
- c) The balance of lots subject to future subdivision applications.

A Residential Density Code Plan is not required if the WAPC considers the subdivision is for one or more of the following:

- d) The amalgamation of lots;
- e) Facilitating the provision of access, service or infrastructure;
- f) The subdivision of land which, by virtue of its zoning or reservation under the Structure Plan, cannot be developed for residential purposes; or
- g) Is in accordance with a previously approved Residential Density Code Plan.

4.2.4. Local Development Plans

Local Development Plan(s) may be prepared and implemented by the City of Wanneroo, pursuant to Part 6, Clause 47 of the Planning and Development (Local Planning Schemes) Regulations for lots with one or more of the following attributes

- a) Lot size of 260m² or less;
- b) Rear-loaded vehicle access;
- c) Lots abutting public open space and or Parks and Recreation reserves; and
- d) Grouped or Multiple Dwellings;

Local Development Plans being prepared and approved for lots with one or more of the above attributes are to address the following matters, where relevant:

- a) Surveillance and interface of public open space;
- b) Vehicular access and garage locations;
- c) Building, height, scale, site cover and setbacks;
- d) Landscaping;
- e) Dwelling orientation and solar access.

Where a Local Development Plan is required, a condition of subdivision approval should be imposed by the WAPC, requiring the preparation, approval and implementation of a Local Development Plan.

4.3. Other Requirements

4.3.1. Heritage

The Structure Plan area has Aboriginal Cultural Heritage sites, as mapped by the DPLH Aboriginal Cultural Heritage (ACH) Inquiry System, within it. Noting these sites are located within existing reserved land, no change to these reservations is proposed by the Structure Plan.

To further avoid or minimise the risk of potential harm to ACH sites 3471 (Lake Mariginiup) and 28616 (Lake Mariginiup Scarred Tree) by future subdivision and/or development, landowners should, where appropriate:

- a) Survey peg and demarcate existing lot boundaries to the adjoining reserves to demarcate no-go areas within the Lake Mariginiup Reserve and/or Reserve 46711, being 260 Pinjar Road, where the scar tree is located in proximity to the lake, to avoid harm; and thereafter
- b) Engage with, and as appropriate, enable Aboriginal knowledge holder monitoring of land in proximity to these sites prior to and during ground disturbing works.

4.3.2. Bushfire Management Plan

Land within the Structure Plan area is mapped as being bushfire prone under the Department of Fire and Emergency Services Bushfire Prone Mapping.

The Structure Plan is supported by a Bushfire Management Plan, prepared in accordance with the *State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP3.7)*. Any development on land within the Structure Plan area shall be constructed in accordance with the recommendations of the Bushfire Management Plan and comply with the requirements of *Australian Standard 3959 – Construction of Buildings in Bushfire Prone Areas*.

Bushfire management requirements will ultimately be considered as part of future applications to subdivide or develop land within the Structure Plan area. A site-specific Bushfire Management Plan, where applicable, may be required at that time. As a minimum, a Bushfire Attack Level Contour Plan, prepared in accordance with an approved Bushfire Management Plan, will be required to be submitted at the time of lodgement of an application for subdivision and/or development approval.

Refer to **Appendix 6 – Bushfire Management Plan**.

4.3.3. Wetland Buffer and Foreshore Strategy

Mariginiup Lake and Little Mariginiup Lake are located within the Structure Plan area. The Structure Plan recognises these existing wetlands as already reserved for 'Parks and Recreation' under the Metropolitan Region Scheme.

The Structure Plan is supported by a Wetland Buffer and Foreshore Strategy. The Strategy outlines the required management actions to ensure the protection of the foreshore reserve. Any development or works within these reserves should be consistent with the Strategy.

Refer to **Appendix 9 – Wetland Buffer and Foreshore Strategy**.

4.3.4. Land Use Interface Considerations

The Structure Plan area will transition from rural and rural living land uses to urban residential uses as contemplated by this Structure Plan. This land use change will occur in a staged manner over time, and any applications for subdivision and development shall consider the need to manage land use interface requirements. This may include the consideration of post development finished fill levels, adjoining land uses, access and the like.

4.3.5. Infrastructure Arrangements

The Engineering Servicing Report and Transport Impact Assessment accompanying the Structure Plan demonstrate that the development precinct can be readily serviced with any upgrades to infrastructure managed through normal infrastructure planning and development processes.

All infrastructure necessary to service the future subdivision and development of the Structure Plan area shall be upgraded, modified, or extended, where applicable. This shall be considered as part of detailed engineering design, required as a condition of subdivision approval.

Refer to **Appendix 3 – Servicing Report** and **Appendix 5 – Transport Impact Assessment**.

4.3.6. Development Contributions

A District Development Contribution Plan (DDCP) for the entirety of the East Wanneroo District Structure Plan area, including the land bound by this Structure Plan is currently being prepared. Upon the progression of the DDCP and its adoption via an amendment to the City of Wanneroo's District Planning Scheme No.2, development within the Structure Plan area shall be subject to contributions in accordance with the DDCP.

No Local Development Contribution Plan is proposed for the Structure Plan. Key neighbourhood roads are equitably distributed and can be delivered by affected landowners either as road extensions or road widening. Similarly, the Structure Plan provides for the equitable distribution of public open space within 'sub-precincts' across the Precinct 8 area. Landowners are expected to provide key road and open space infrastructure in accordance with the Plan 1 – Structure Plan Map. Accordingly, a Local Development Contribution Plan is not required to facilitate infrastructure coordination. Where necessary, landowners may enter into individual agreements to assist in localised staging and delivery.

5. Additional Information

Details regarding additional information required to be submitted and the stage at which it is to be provided are summarised below:

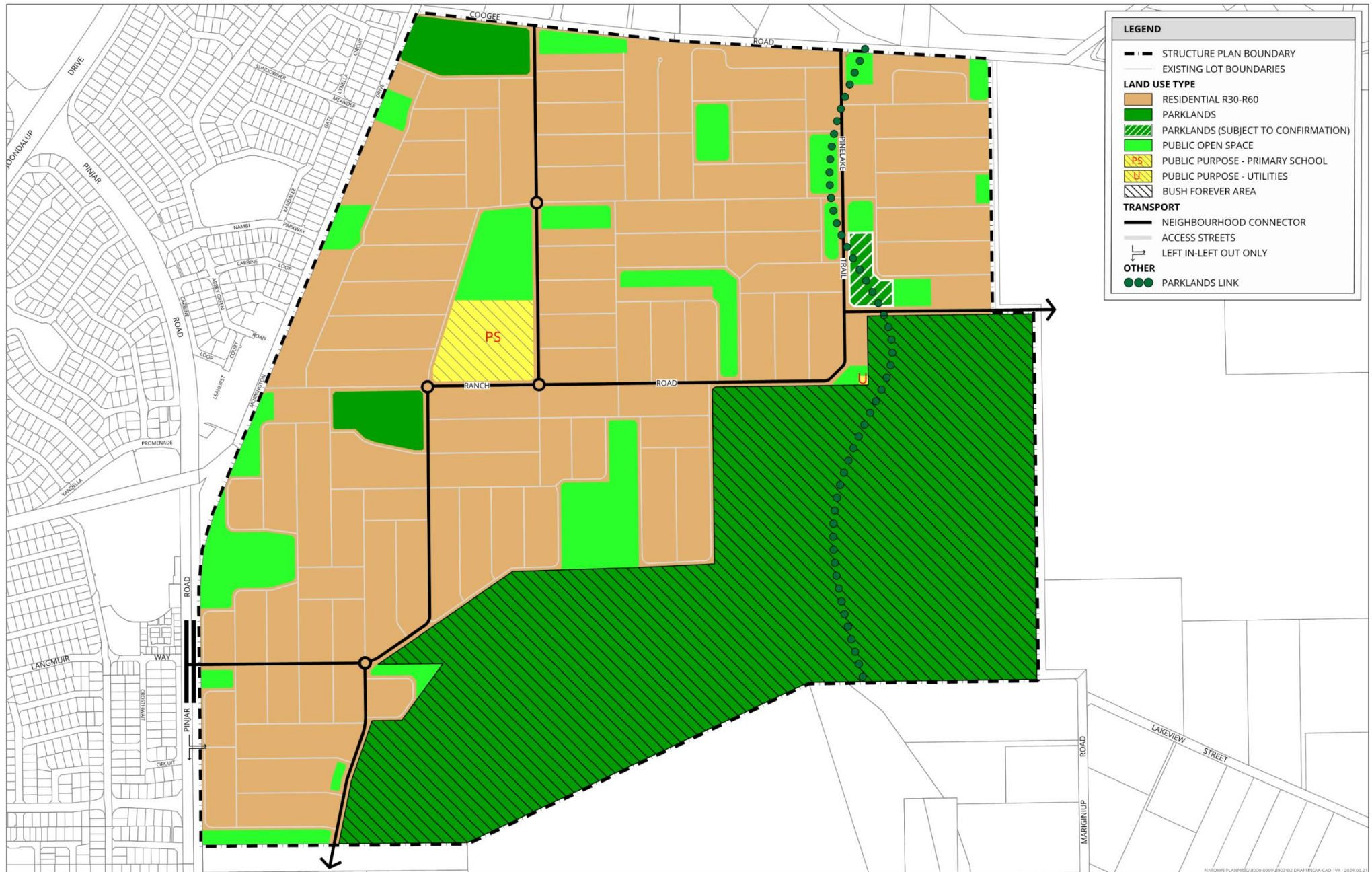
Additional Information / Purpose	Approval Stage	Responsible Agency (Consultation Required)
Bushfire Management Plan (Review) and / or Bushfire Attack Level Contour Plan Assessment	Subdivision or Development Application	City of Wanneroo and Department of Fire and Emergency Services
Residential Density Code Plan	Subdivision Application or Development Application	City of Wanneroo
Public Open Space Schedule	Subdivision Application	City of Wanneroo

Table 1: Information to be Submitted with an Application

Condition of Subdivision and/or Development Approval	Responsible Agency
Local Development Plan (LDP)	City of Wanneroo and / or WAPC
Urban Water Management Plan (UWMP)	City of Wanneroo

Table 2: Information Required as Condition of Approval





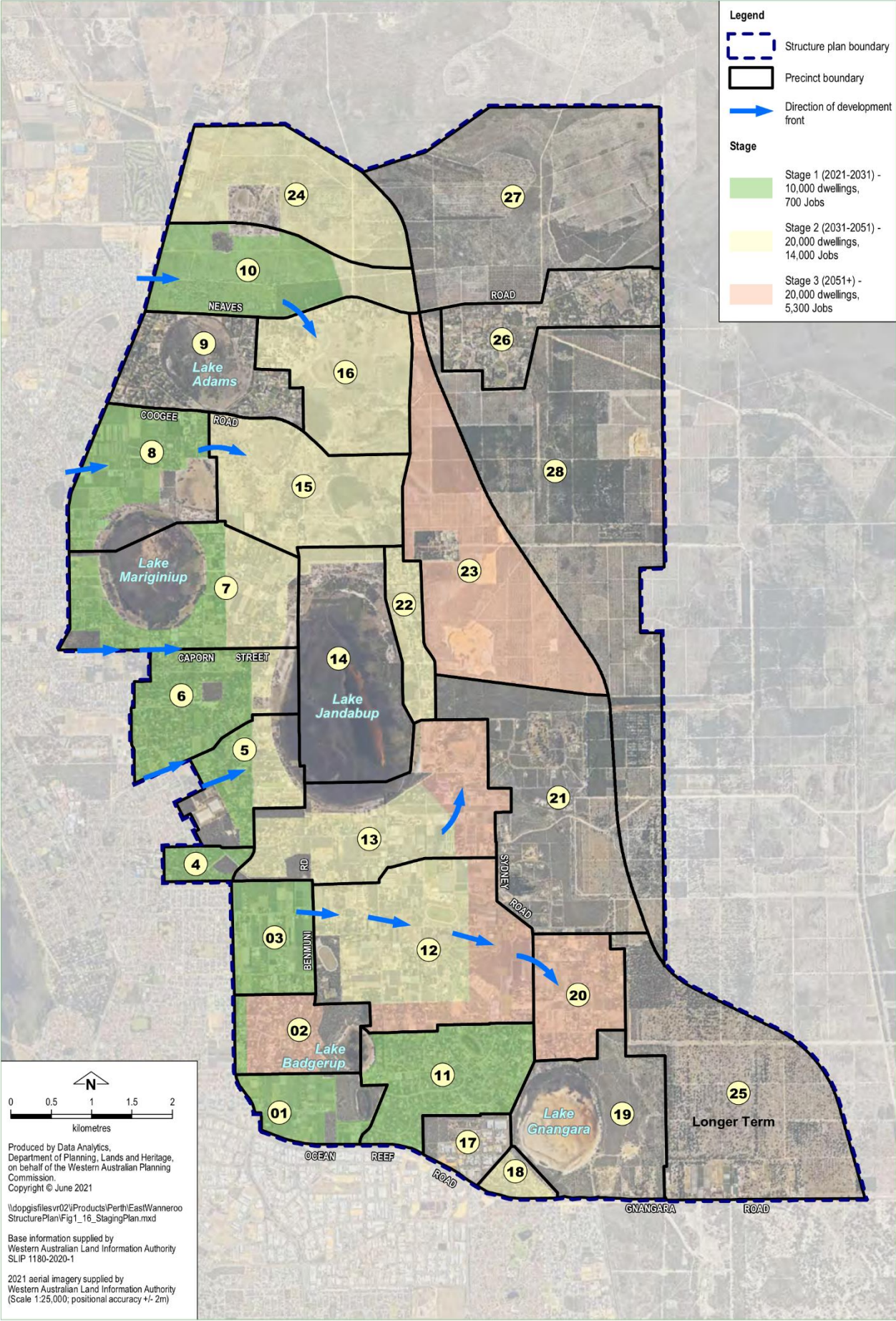


Figure 1.16: Staging Plan

Schedule of Modifications: Precinct 8

No.	Recommended Modification	Administration Comment
Preamble		
1	<p>Under 5, modify Table 1 by changing the responsible Agencies as follows:</p> <ul style="list-style-type: none"> • BMP: replace DFES with WAPC • R-Code density plan: replace CoW with WAPC <p>And</p> <p>Include the following under Table 2:</p> <ul style="list-style-type: none"> • Vegetation Management Plan – CoW and DBCA • Conservation Area Management Plan – CoW • Fauna Management Plan – CoW • Construction Environmental Management Plan – CoW • Urban Water Management Plan – CoW • Acid Sulphate Soil Management Plan and Dewatering management Plan – DWER • Soil and Groundwater Contamination Investigation – DWER • Landscaping Plan/Tree Master Plan CoW 	Entails corrections and updates
2	The anticipated dwelling yield being recalculated based upon revised locational criteria	The proposed modification has been recommended due to Administration's subsequent modifications to residential density code locational criteria
Part 1 – Implementation		
3	Under 4.1.3 Public Open Space, insert POS Plan and POS Schedule	The POS Schedule and Plan is required to be included in the Part 1 - Implementation section of the LSP as per Structure Plan Manner and Form requirements
4	Under 4.1.2 delete: <i>'Road reserves will be landscaped in a manner generally consistent with the street cross-sections set out in the Landscaping Masterplan.'</i>	This should be reviewed and approved at detailed design stage in consultation with the City in line with LPP 5.3 requirements
5	Under 4.1.2 Road Reserves, replace: <i>'... the WAPC's Liveable Neighbourhoods operational policy'</i> with	LPP 5.3 further refines the Liveable Neighbourhoods road cross-sections providing a local interpretation of each of the

No.	Recommended Modification	Administration Comment
	<i>'the City of Wanneroo Local Planning Policy 5.3 East Wanneroo'</i>	road classifications. Road reserve widths are generally increased to permit wider verges facilitating wider footpaths and retention of native trees
6	<p>Under 4.2.2 Locational Criteria, a) and b) be replaced by the following:</p> <p>I R30</p> <ul style="list-style-type: none"> a. a base code of R30, b. all lots abutting Coogee Road <p>II. R40 for lots:</p> <ul style="list-style-type: none"> a. at the end of cells; b. within 250m of Public Open Space or Parks and Recreation reserves c. abutting or directly opposite a primary school; and/or d. with frontage to a neighbourhood connector road; <p>III. R60 for lots:</p> <ul style="list-style-type: none"> a. with frontage to a road that is a high frequency bus route; b. abutting or directly opposite Public Open Space or Parks and Recreation reserves c. abutting or directly opposite a primary school; and/or d. with frontage to a neighbourhood connector road 	The proposed modification has been recommended as it is considered a more refined approach for locational criteria that will provide for an improved and more balanced outcome, to establishing more diverse density in the and will also be more in line with the intended outcomes of the EWDSP, including having larger R30 lots adjoining Precinct 9 with its larger rural lots to provide a better transition
7	Delete 4.2.3 Residential Density Code Plan. Specific residential densities must be shown on the LSP Map in lieu of residential density ranges	Depicting specific densities on the LSP Map is preferable as it will simplify the subdivision process, provide clarity at an early stage and avoid unnecessary confusion. Due to the relative simplicity of the residential area's layout, there is no apparent reason why specific densities cannot be applied on the LSP Map
8	Under 4.3.6 Development Contributions, replace: <i>'A District Development Contribution Plan ('DCP') for the entirety of the East Wanneroo District Structure Plan area, including the land bound by this structure plan is currently being prepared.'</i> with	The proposed modification has been recommended given that the status of the District DCP will change

No.	Recommended Modification	Administration Comment
	<i>'A District Development Contribution Plan ('DCP') will apply for the entirety of the East Wanneroo District Structure Plan area, including the land bound by this structure plan is currently being prepared'</i>	
9	<p>Under 4.3.6 Development Contributions, replace: <i>'No local Development Contribution Plan...staging and delivery.'</i> with <i>A Local Development Contribution Plan (or other satisfactory arrangement) will be prepared to facilitate the coordination and fund the provision of required infrastructure specific to Precinct 8 between all landowners to the satisfaction of the City of Wanneroo, including (but not limited to):</i></p> <ul style="list-style-type: none"> • 10% POS • 10% POS Development • Neighbourhood connectors; and • 1 x Local Community Facility. <p><i>To establish a Local DCP, an amendment will be required to the City of Wanneroo DPS 2, after which subdivision and development within the Structure Plan area will be subject to development contribution in accordance with the Local DCP.</i></p> <p><i>The Local DCP is to be substantially progressed prior to subdivision occurring within Precinct 8</i></p>	<p>The proposed modification has been recommended given that Precinct 8 has significantly fragmented landownership that is likely to result in an inequitable distribution of POS on individual landowners</p>
10	<p>Under Section 4.1, insert a new 'Local Centre' section, and renumber accordingly. This section is to address the provision of a Local centre and to be shown on the LSP Map</p>	<p>The EWDSP identifies the need for a Local Centre for Precinct 8</p>
11	<p>Under Section 4.3, insert a new 'Native Vegetation' section, and renumber accordingly. Include the following additional text: <i>'The Structure Plan provides for the retention of vegetation in public open space, regional ecological linkages, wetland buffer and road verges. Applications for subdivision and/or development approval shall give due regard to the Landscaping Master Plan and Sense of Place Statement pertaining to native vegetation retention</i></p>	<p>To ensure that vegetation is adequately managed within the precinct. In addition, a tree retention plan is required demonstrating that vegetation worthy of retention has been incorporated into POS and road reserves</p>

No.	Recommended Modification	Administration Comment
	<p><i>Amenity planting in streetscapes and areas of public open space shall be undertaken having regard to the City of Wanneroo's Street Tree Schedule.</i></p> <p><i>A Tree Retention Plan will be required as a condition of subdivision and development approval to protect significant breeding trees.</i></p> <p><i>A Vegetation Management Plan will be required upon lodgement of future subdivision and/or development approval (as applicable) to reduce the risk of introducing and distributing pathogens or weed species to areas of retained vegetation within the Structure plan area.</i></p> <p><i>A Conservation Area Management Plan outlining detailed specifications of proposed conservation reserves shall be prepared in accordance with the City of Wanneroo's environmental Management Plan Guidelines upon lodgement of future subdivision applications.'</i></p>	
12	<p>Under 4.3.3 Wetland Buffer and Foreshore Strategy replace the word 'Strategy' in the heading with 'Management Plan' and insert: <i>'A Wetland and Foreshore Management Plan is to be prepared by the Department of Planning, Lands and Heritage for the Lake Mariginiup and Lake Jandabup wetland, its buffer and foreshore areas, to inform its future rehabilitation, protection, and management, as required by the East Wanneroo District Structure Plan prior to subdivision or development'. The Wetland Buffer and Foreshore Strategy that supports the structure plan is to be modified to reflect all findings and requirements of the approved Wetland and Foreshore Management Plan.</i> after: <i>'...Metropolitan Region Scheme.'</i> And delete the last paragraph from: <i>'The Structure Plan is supported by a Wetland Buffer and Foreshore Strategy...'</i> To <i>'...consistent with the Strategy.'</i></p>	<p>The Wetland and Foreshore Management Plan is a requirement under the EWDSP and Part 1 should be reflective of this</p>
13	<p>Insert a new 'Fauna Management' section, and renumber accordingly. Include the following text:</p>	<p>To ensure that fauna is adequately managed within the precinct</p>

No.	Recommended Modification	Administration Comment
	<p><i>'Fauna Management measures will need to be implemented to ensure that fauna habitat disturbance is minimised during development works.</i></p> <p><i>A Fauna Management Plan and Construction Environmental Management Plan will be required upon lodgement of future subdivision and/or development to address the management of fauna species and their habitats, having regard to the City's Local Planning Policy 3.3 Fauna Management.'</i></p>	
14	<p>A new section being created titled Protection and management of environmental features, which includes the provision:</p> <p><i>'Where possible trees and native vegetation are to be retained within road reserves and public open spaces, subject to detailed design.'</i></p>	This modification is recommended to ensure that where possible trees and native vegetation are retained within road reserves and public open spaces within the LSP area
15	Specific provisions being incorporated to demonstrate how the LSP will address the City's 'Place Framework'	This modification is recommended to ensure that the LSP incorporates key aspects which address the District Sense of Place Statement (DSOPS) included within LPP 5.3 and create a distinct Local Sense of Place for Precinct 8
16	The LSP Map, Part 2 and the technical documentation amended to address Administrations recommended modifications above accordingly	This modification is recommended noting the range of other recommended modifications by Administration which will impact both Part 2 and the associated technical documentation
17	That a section be included to require an Acid Sulphate Soil and Dewatering Management Plan be in place as prepared by DPLH prior to lodging development or subdivision applications	This is recommended to ensure subdivision or development applications are not lodged prematurely
LSP Map		
18	The map being modified to exclude Lots 2 (264), 41 (252), 42 (252L) and 302 (264L) Pinjar Road from Precinct 8 from the structure plan area	Although shown as part of Precinct 8 under the EWDSP, the above lots were recommended to be included in the Precinct 7 LSP area as per Council's resolution under Item PS04-10 and subsequent advice to the WAPC. Inclusion of these lots within the Precinct 7 LSP area was deemed prudent as these lots will accommodate a sewer

No.	Recommended Modification	Administration Comment
		pressure main that is necessary to service Precinct 7 (and the broader locality)
19	The LSP Map be modified to depict specific residential densities in lieu of a range residential densities	Depicting specific densities is referable as it will simplify the subdivision process, provide clarity at an early stage and avoid unnecessary confusion. Due to the relative simplicity of the residential area's layout, there is no apparent reason why specific densities cannot be applied on the LSP Map
20	The community facility being identified on Plan 1.	This modification is recommended to confirm that the community facility will be provided.
21	A Local Centre being identified on Plan 1	The EWDSF identifies the need for a Local Centre for Precinct 8
22	The size of POS 6 that adjoins the primary school be increased to a minimum 5 ha in size and be reconfigured to a rectangular shape	To sufficiently cater for future community needs within Precinct 8. Very little space is available outside of the playing fields for additional supporting amenity, i.e. car parking, a sporting pavilion, vegetation retention, etc., especially given the presence of the drainage area
23	The size of the primary school site be increased to a minimum 3.75 hectares	To facilitate the provision of childcare services in accordance with the provisions of OP 2.4
24	POS sites 4, 7, 11, 16, 19, 20 and 21 are to be modified to demonstrate that they can accommodate the design requirements specified under LPP 4.3	The sizes of the POS sites render them either unlikely or unable to accommodate the standard design requirements of LPP 4.3. They are also irregularly shaped sites and offer minimal benefit to the community. The overall result being small areas of compromised POS focused on solving surface drainage and that do not provide usable spaces that meet the recreational needs of the community

No.	Recommended Modification	Administration Comment
25	LSP Map being updated to indicate the trees to be retained within the LSP area	This modification is recommended so that trees to be retained within the LSP area are depicted on the LSP Map in accordance with the WA Planning Manual: Guidance for Structure Plans
26	Under 4.3.1, replace: <i>A site-specific Bushfire management Plan, where applicable, may be required at that time.</i> with: <i>'A Bushfire Management Plan is required to be submitted at subdivision stage if the area of subdivision is located within a designated bushfire prone area. The BMP shall seek to limit the clearing of significant breeding trees for the Black Cockatoo.'</i>	The BMP should seek to limit the clearing of significant breeding trees for the Black Cockatoo
27	Maps and Figures within the technical appendices and Part 2 being amended to reflect the LSP Map	This modification is recommended as a consequential amendment from Administration's other recommended modifications pertaining to the increased Wetland Buffer, the modified educational facilities, and the modified LSP boundaries
28	LSP Map being updated to depict the Parkland Link extending right around Lake Mariginiup	To facilitate improved cyclist and pedestrian movement around the whole lake
29	LSP Map being updated by depicting road reserve widths in accordance with LPP 5.3	To ensure LPP 5.3 requirements are met
Part 2 – Explanatory		
30	Clause 2.1.5.3 Power being updated to require that prior to the approval of electrical designs for any particular stage of development within the precinct, that Administration is consulted	This modification is recommended to limit the reduction in size of POS in order to minimise impacts to the provision of POS
31	Clause 2.1.5.4 Telecommunications being updated to discuss potential telecommunications tower locations within the LSP area	This modification is recommended given that in accordance with LPP 2.5: Telecommunications Infrastructure, structure planning proposals are required to give some consideration to demand for

No.	Recommended Modification	Administration Comment
		telecommunication services. As such, further commentary is required to discuss where opportunities for telecommunications infrastructure exist within the LSP area
32	A new Local Centre section being included	The EWDSP identifies the need for a Local Centre for Precinct 8
Part 3 – Technical Documentation		
General		
33	All technical appendices being modified to consider changes to the boundaries of the LSP	This modification is recommended given that the modification of LSP boundaries will have implications for some of the technical reports
Environmental Assessment Report		
34	Update to discuss the quantification of impacts on environmental values	This modification is recommended in accordance with the advice provided by DWER
35	Inconsistency with depth to groundwater, also when compared to LWMS to be confirmed and rectified	The Environmental Assessment Report, LWMS and LSP to be updated to reflect groundwater depth as per the results from the district assessment, which has not yet been completed
Bushfire Management Plan		
36	The BMP being modified to address matters raised by DFES	This modification is recommended so that the Bushfire Management Plan is updated to address the concerns raised by DFES
37	The BMP being updated to adequately consider the retention of vegetation within POS to ensure adequate tree canopy can be retained	This modification is recommended to facilitate tree retention in POS areas
Landscape Strategy		
38	The Landscape Strategy being amended to demonstrate that nature-based education is achieved within the Parkland Link. The Strategy is to be updated to include a parkland link route and associated amenities, including extending the route alignment to encircle Lake Mariginiup	This modification is recommended to ensure that the parkland link delivers on its envisaged purpose as prescribed within the EWDSP as this network will provide significant value to the community and is intended to ensure that the wetlands, native

No.	Recommended Modification	Administration Comment
		vegetation and landforms are connected, strengthened and tell the story of East Wanneroo
39	That the strategy be updated by the inclusion of a detailed tree survey plan	To inform inclusion on the LSP map
40	The Landscape Master Plan being updated to reflect the POS sizes as shown on the POS Plan	Currently, there are discrepancies
	Strategy to be updated to indicate how residential development will take advantage of natural features and maximise view and to include specific measures on how to the retention of the ridgeline/high points will be retained in a way that integrates with Precinct 15	To maximise opportunities provided by the natural topography of the area.
Transport Impact Assessment		
41	The TIA being modified in accordance with the changes to the road alignments and road hierarchy that will result from proposed modifications, including the inclusion of a local centre, primary school site and amended POS sites as well as traffic modelling to be done by DPLH. This be referred to Main Roads WA for comment	This modification is recommended as the findings of the TIA will be impacted
42	The TIA being updated with the Access road abutting the primary school site being changed to Access Road B	To facilitate embayment parking
43	The TIA being updated to clarify the number of access points onto Morning Drive/Pinjar Road.	The plan appears to show four access points, TIA states five access points
44	All proposed Neighbourhood Connector Roads to provide adequate pedestrian crossing points	These modifications are recommended in accordance with the requirements of the WAPC Transport Impact Assessment Guidelines Volume 3
45	All proposed road connections to adjoining Precincts are to share the same classification across Precinct boundaries and should be as shown on the District Structure Plan	To ensure seamless connection between Precincts
46	The TIA being updated and SIDRA modelling updated to show all projected traffic volumes on all roads surrounding the school as well as throughout the precinct	To accurately reflect traffic volumes which will ensure roads reserves and intersections that are proposed are adequate
47	The TIA being updated to include the pedestrian and cycle network. A shared path network shall service the proposed school. In addition to showing on road cycle lanes and showing connections to the Parkland Link, the network also needs to	This modification is recommended in accordance with the advice received from Department of Transport

No.	Recommended Modification	Administration Comment
	provide connections to facilities in Banksia Grove and to the shared path on Pinjar Road	
48	Traffic study be updated to identify required improvements to accommodate traffic volumes at Pinjar Road/Nambi Parkway beyond 2036. Impact of additional traffic volumes on Mornington Drive and Greenvale Place needs to be identified	To accurately reflect traffic volumes which will ensure roads reserves and intersections that are proposed are adequate
49	Update TIA to indicate if T-junction of Pinelake Trail/E-W Neighbourhood Connector will require a higher order of intersection control as this road will extend east into Precinct 15. This road will also service a Primary school. Precinct 15 TIA indicates road will accommodate up to 7200 vpd	The TIA is required to accurately reflect suitable pedestrian crossings in line with traffic volumes
50	TIA being updated to indicate what specific pedestrian crossing provisions will be required to facilitate a walkable catchment and updated to confirm that safe pedestrian crossings will be provided to facilitate access across major roads	These modifications are recommended to demonstrate that the LSP achieves pedestrian crossings that will be safe
51	The TIA being modified to include road cross-sections in accordance with LPP 5.3	Road cross sections to be provided as required under LPP 5.3
52	The TIA be updated to identify the need to design Coogee Road so as to maintain the rural character of the Lake Adams Special Rural area	Careful consideration will have to be given to the interface between Precincts 8 and 9, therefore there is a need to address the road interface of these two precincts sensitively
Wetland Buffer and Foreshore Strategy		
53	Section 4.2 being updated by referencing the correct Figure, which appears not have been provided	Figure 4 is incorrectly referenced
Local Water Management Strategy		
54	The LWMS shall be updated following the DGWMS being approved by DWER	This modification is recommended to inform outcomes
55	A catchment plan to be added to the document which is to include high level stormwater management details	To explain how stormwater will be configured in POS

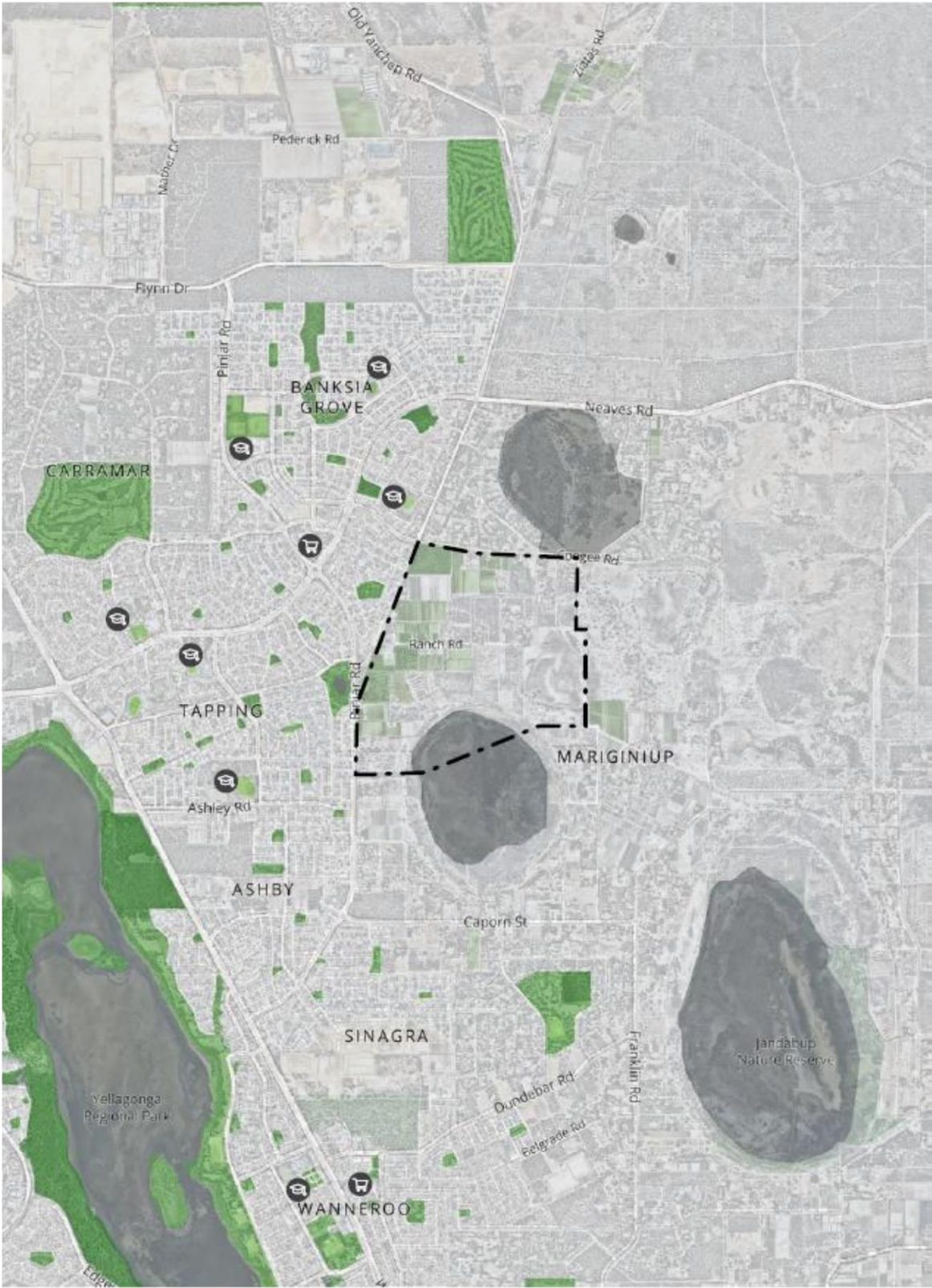
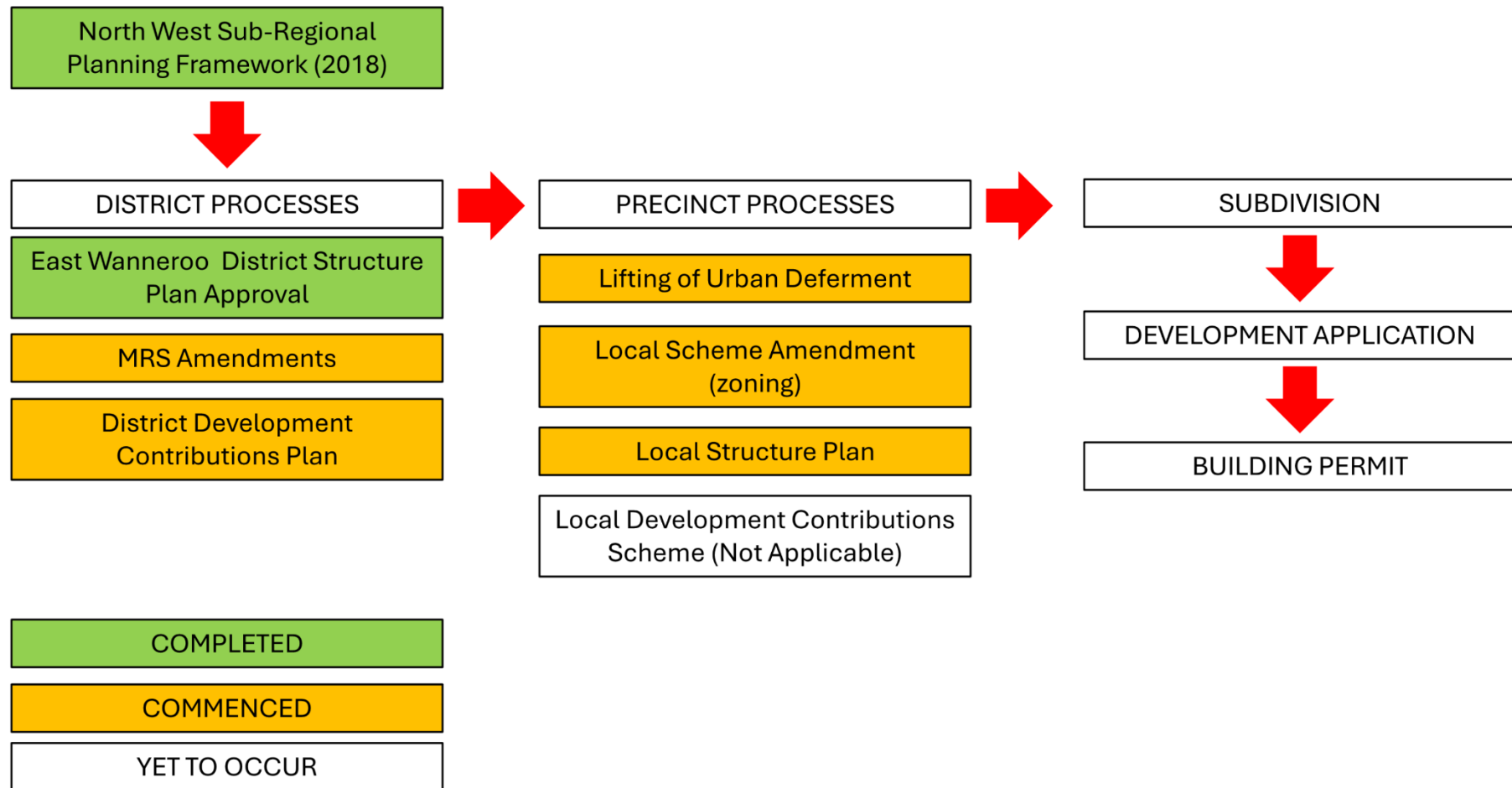
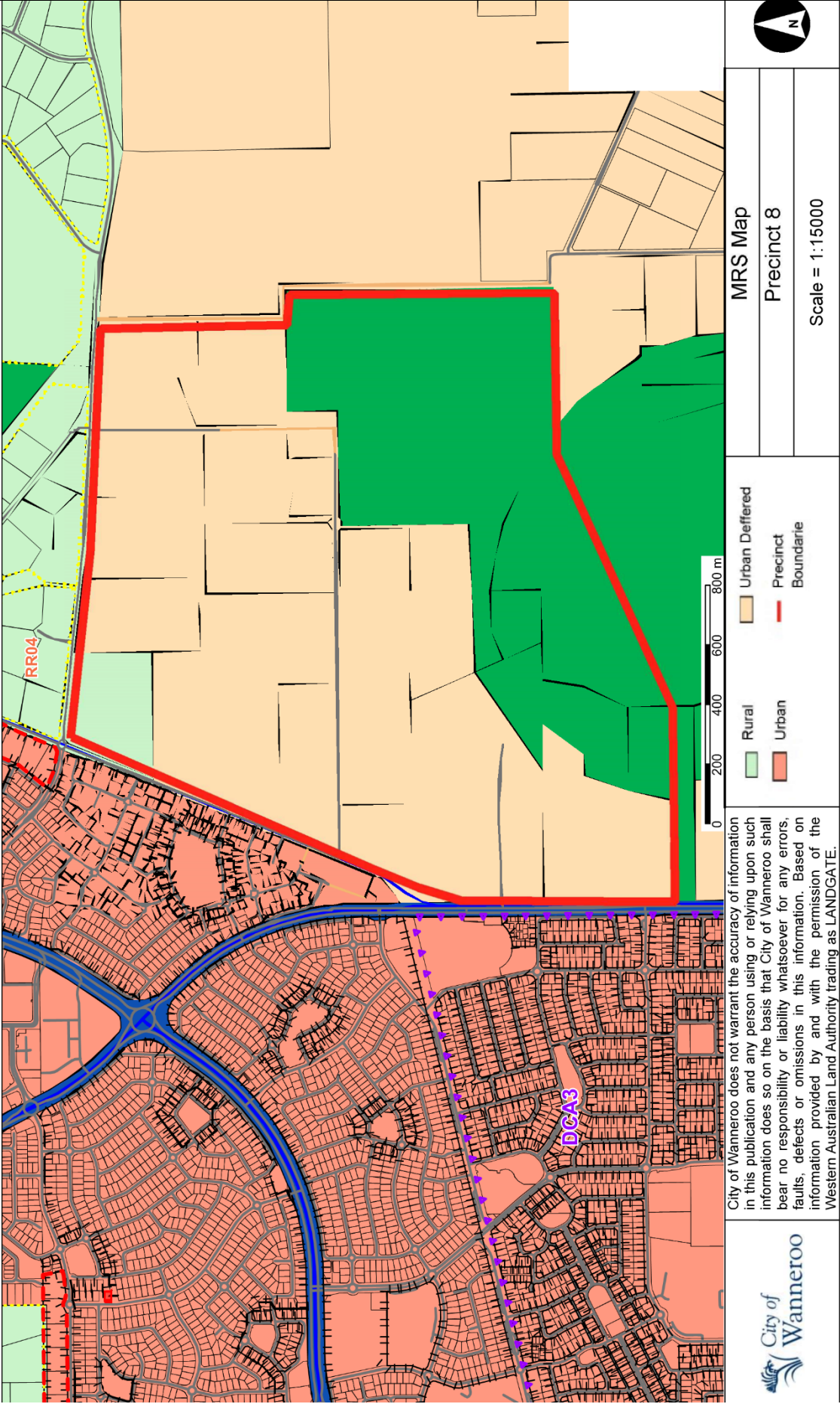


Figure 3 – Local Context

EAST WANNEROO PROCESS CHART





	Summary of Submission	Administration Comment	Recommendation
1.	<p><u>Object</u></p> <p>I am concerned about the proximity of the development to the Lake Adams conservation area. New housing developments will attract even more people and dogs being allowed off-leash, which is a threat to the fragility of this environment. Already dogs are attacking bobtails and other wildlife, and there is no policing or signage to indicate the dogs must be leashed. Furthermore, the increased traffic to this area will cause more noise and pollution to the area. I am very sad to see this proposal, as I purchased my property believing that it was a semi-rural area.</p>	<p>The area is already approved for urban development under the EWDSP. The proposed LSP is consistent with the EWDSP. It is also acknowledged that urban development at the scale of what is proposed in the EWDSP area will be disruptive for current landowners as a result of the works that will occur to make the LSP's for the various precincts realise, including noise, dust and increased traffic as the development progresses through the area in different stages over time.</p>	<p>No modifications required.</p>
2.	<p><u>Support</u></p> <p>Fully support the proposal. It has been a long time coming.</p>	<p>Noted.</p>	<p>No modifications required.</p>
3.	<p><u>Object</u></p> <p>I object as we purchased acreage property for the peacefulness of the area and being away from suburbia. The amount of traffic this would generate as an additional 7000 people move in within a couple of hundred metres away will inevitably affect the surrounding area, the level of noise and pollution. Also if Greenvale place is then ever opened up to allow for traffic to move onto Joondalup drive this would also be a major detriment to our property. We moved here and paid a premium price and if this proposal goes through, we will own a property that isn't allowed to be rezoned in the middle of suburban area. Also, down the road one of the special residential blocks at 10 Turquoise loop/103 Greenvale place somehow received permission to convert the whole block to an early learning centre. I do not understand how this was possible. We were issued a fine for the previous owners clearing bushland, when we applied for a larger building block to accommodate a pool. Our two neighbours have completely cleared their bushland and no one has done anything else about it being 23, and 29 Peridot turn Banksia Grove.</p>	<p>The area is already approved for urban development under the EWDSP. The proposed LSP is consistent with the EWDSP. It is also acknowledged that urban development at the scale of what is proposed in the EWDSP area will be disruptive for current landowners as a result of the works that will occur to make the LSP's for the various precincts realise, including noise, dust and increased traffic as the development progresses through the area in different stages over time.</p>	<p>No modifications required.</p>
4.	<p><u>Support</u></p> <p>On behalf of the owners of Lot 5 (56) Ranch Road and Lot 39 (294) Pinjar Road, East Wanneroo, it is advised that the proposed Local Structure Plan is supported. To align with the current planning framework, it is requested that the advertised LSP includes a notation referencing the pending MRS amendment from "Parks and Recreation" to "Urban Deferred" in the south-eastern portion of the landholdings.</p>	<p>The proponent advised as follows: <i>We understand the owners are proposing a MRS amendment to address this matter, wholly separate to the Precinct 8 LSP. Should this amendment be successful, the Precinct 8 LSP will need to be modified to reflect this; however, at this time it can only respond to the current MRS reservations/ zonings.</i></p>	<p>No modifications required.</p>

	Summary of Submission	Administration Comment	Recommendation
		Administration concurs.	
5.	<p><u>Object</u></p> <p>I do not support the current plan. The biggest problem with the current plan is the excessive destruction of endangered bushland. I live directly across the road from the largest and best preserved section of native Banksia bushland in the area - that labelled as lot 5. I see the diversity of bird and animal life that live in and use that bush on a daily basis and can see no reason why it would benefit our community to wipe out most of it. Your own planning reports recognise its value and the good condition it is in, and then inexplicably recommends bulldozing most of it. This is unacceptable and will have a detrimental effect on the animals and birds that live there, including the rare Carnaby Cockatoo.</p> <p>Some simple pathways allowing people to more easily access this lovely bush is all that is needed to enhance/conservate the area. Destroying this bush would be an irreversible loss to our community and a waste we could never get back. There are plenty of places we can build more houses. There are not many areas of native untouched bush in this area.</p> <p>My other major concern is that the current plan shows a new road being built through where this bush currently is) directly in front of my house. I did not purchase a house on the T of an intersection and I would not have considered building here if it was. I am absolutely opposed to having a new road directly facing my master bedroom and given the regularity with which a number of drivers speed around the neighbourhood and do burnouts at the nearby roundabout at Tumbleweed Drive I fear it would only be a matter of time before I end up with a car through the front of my house. I see no reason why there needs to be a road there - for a start that section of bush should already be maintained as I have already stated. For access to the new housing, it would make far more sense to extend Sundowner meander to the east and turn the intersection with Mornington Drive into a roundabout. This would solve two problems - it would minimise disruption to the existing residents and it would help slow the traffic that regularly hits 70kph along Mornington Drive.</p> <p>I am largely in favour of the plan proposed by the Friends of East Wanneroo referenced here: https://foew.com.au/precinct-8-structure-plan/ as long as the suggestion above regarding Sundowner Meander is included in it.</p> <p>I strongly urge the council to amend their current proposal and await their response.</p> <p>I also note that I have not previously bothered voting in local government elections, but I will absolutely be doing so and urging my local friends to in future based on how well this council proves to be in taking feedback from residents rather than developers in regards to this issue. I believe many of my neighbours also do not support the plan and will be making submissions.</p>	<p>The proponent provided the following additional information to clarify some key points in relation to 5 Mornington Drive:</p> <p><i>Lot 4 is completely devoid of native vegetation. Lot 5 supports native vegetation that is Carnaby's and forest red-tailed black cockatoo foraging habitat, the EPBC Act listed Banksia woodlands of the Swan Coastal Plain Threatened Ecological Community (Banksia woodlands TEC, which is also a State listed Priority Ecological Community (PEC)) and Floristic Community Type (FCT) 20a, which is listed as a TEC pursuant to the Biodiversity Conservation Act 2016 (BC Act). Notwithstanding the above, the current landowner holds an EPBC Act approval to progress residential development over a portion of Lot 5. Any remaining remnant bushland will remain an MRS P&R reserve</i></p> <p><i>In terms of the road network, the Precinct 8 LSP was designed to deliberately avoid the need for 4-way intersections at Nambi Parkway and Sundowner Meander to minimise any impact to the existing local roads network and residents, as 4-way intersections were shown to just encourage through traffic or 'rat running'. Instead, the LSP has been designed to direct traffic to key neighbourhood connections, to minimise impact.</i></p> <p>Administration has no reason to disagree with the additional clarifying information as provided.</p> <p>With regards to Lot 5, it is acknowledged that the conservation of flora and fauna should be a priority. If development is to occur over any portion of Lot 5, all necessary approvals will need to be obtained from the relevant environmental agencies. In this regard it is noted that the proponent has confirmed that the landowner holds a current EPBC Act</p>	No modifications required.

	Summary of Submission	Administration Comment	Recommendation
		approval to progress residential development over a portion of Lot 5.	
6.			
	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>This block of bushland boasts a wide variety of wildflowers and provides areas for animals to nest and shelter.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>There is a parcel of bushland over in Tapping on the corner of Spring Hill and Waldburg Drive that has been preserved for wildlife.</p> <p>It would be beneficial to the area to maintain this bushland in Banksia Grove in a similar manner. By turning the already existing fire break into a compact limestone track would ensure the fire break remains intact and create a walking trail that people would be able to utilise while providing the ecosystem with a lifesaving refuge.</p> <p>I would also suggest the road be relocated down Mornington Drive in line with Sundowner Meander and a round about be installed at what would now be a 4 way intersection. This would slow down traffic racing along Mornington Drive which for many years has been a bit of a drag strip, making it safer for the residents living in the community and would allow the maximum amount of bushland to be saved.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p> <p>Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks.</p> <p>Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p>	<p>The LSP provides for 19ha (12.3%) of creditable open space which is in addition to the high amount of natural areas being set aside which equates to a further 37% as per the information provided by the applicant, taking the total amount of open space to around 50% of the total structure plan area. This submission is largely based on the Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

	Summary of Submission	Administration Comment	Recommendation
	<p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wannon.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		
7.	<p>Object</p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. We have lived across from Lot 5 for 15 years and have frequently visited Lot 5 to explore the wildlife and flora with our children. We have regularly observed kangaroos, bobtails, Carnaby Black Cockatoos, Tawny Frogmouths, Black Kites, other birds and lizards, many wild orchids and wildflowers. Kangaroos regularly visit the area, we have observed kangaroos in recent weeks. The 2024 Environmental Assessment Report states that Lot 5 is classed as vegetated Banksia Woodland (page 10), rated as "very good to excellent" (page 21). Excellent is defined as "Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species". Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wannon. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wannon's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wannon Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p>	<p>This submission is largely based on the Friends of East Wannon generic submission – please refer to response for Submission 8.</p> <p>With regards to Lot 5, the applicant advised that the property is the subject of a federal EPBC approval which balances environment and development outcomes, with the East Wannon DSP subsequently reflecting this approval. The Precinct 8 LSP in turn responds to the DSP and shows the portion of Lot 5 to be retained.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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		<p><i>subsequently been listed as a TEC pursuant to the BC Act. A permit to modify a portion of FCT 20a that occurs within Lot 5 would need to be secured.</i></p> <ul style="list-style-type: none"> <i>• The only impediment to progressing development within Lot 4 and the southern portion of Lot 5 has been the planning status of the site.</i> <i>• The structure plan being finalised and the urban deferred zone being lifted would enable the EPBC Act approval to be enacted, a clearing permit to be secured and a BC Act permit to modify FCT 20a.</i> <p><i>Issue Two</i></p> <p><i>In terms of public open space, the Precinct 8 LSP will creates almost 19ha (12.3%) of creditable open space which does not account for the considerable number of natural areas being set aside which then provides an additional 37%, taking the total amount of open space to around 50% of the total structure plan area. This is most telling when you consider that the total area of planned urban development is approximately 101ha compared with 114ha for open space of some type or form Regarding these spaces, please refer to the Landscape Masterplan for the vision and conceptual manner in which the LSP deliver a balance between active and passive (conservation) open space. This will offer future residents access to a range of open space options, from passive bushland pockets, walking trails through retained vegetation, playgrounds, all the way to active ovals for sporting pursuits - enhancing their quality of life and amenity.</i></p> <p><i>Issue Three</i></p> <p><i>The Precinct 8 LSP follows the frameworks set by the East Wanneroo DSP, including the provision of schools, retail and commercial. The DSP is explicit that Precinct 8 is responsible for the provision of a primary school site. It is in this context that the LSP must be considered, and not in isolation. Further, the East</i></p>	

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		<p>Wanneroo development contribution plan is funding a range of community infrastructure items to further enhance the access to, and quality of , community services on offer.</p> <p>.Administration generally concurs, notwithstanding, Administration has identified that a number of public open space sites do not maximise community benefit and are focused on facilitating drainage outcomes. The sizes of POS 4, 7, 11, 16, 19, 20 and 21 render them either unlikely or unable to accommodate the standard design requirements of LPP 4.3. They are also irregularly shaped sites facilitating drainage and offer minimal benefit to the community. The overall result being small areas of compromised POS that do not provide usable spaces that will meet the recreational needs of the community.</p> <p>With regards to Lot 5, it is acknowledged that the conservation of flora and fauna should be a priority. Notwithstanding, if development is to occur over any portion of Lot 5, all necessary approvals will need to be obtained from the relevant environmental agencies. In this regard it is noted that the proponent has confirmed that the landowner holds a current EPBC Act approval to progress residential development over a portion of Lot 5 generally in accordance the proposed LSP map.</p>	
9.			
	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>


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15.			
	<p><u>Object</u></p> <p>I wish to object to the inclusion of 4,497 square metres of Lot 7 as Public Open Space in this proposed structure plan prepared by Rowe Group. (see attachment)</p>	<p>Lot 10 is already reserved 'Parks & Recreation' in the Metropolitan Region Scheme and as such the City of Wanneroo's local scheme and the Precinct 8 LSP has no jurisdiction on this land, with the LSP map only reflecting this existing P&R reserve. Regarding the area of POS shown on Lot 7 forms only a portion of a larger neighbourhood park, Notwithstanding the design and purpose of this neighbourhood park, it is noted that the 4,497sqm allocated to lot 7 generally equates to approximately 10% of the area of Lot 7, the percentage which every property owner is required to cede under the state government planning framework.</p>	No modifications required.

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 <p>As the owner of Lot 7 and Lot 10, Lot 10 has already been allocated entirely as parklands. It would be unfair for further amounts be taken as public open space from my remaining lot.</p> <p>Even if 4,497 square meters is removed from public open space, we will still meet the 10% minimum open space requirement.</p> <p>Please consider adjusting the proposed plan from Rowe Group.</p>		
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19.			
	<p>Object</p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wannon.</p> <p>Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks.</p> <p>Solution: Create East Wannon's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wannon Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being.</p> <p>We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wannon.</p> <p>Please reference this page for further information, as I agree with its assessment.</p> <p>https://foew.com.au/precinct-8-structureplan/</p>	<p>Friends of East Wannon generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>
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21.	<p><u>Object</u></p> <p>I think the planning put forward by developers has little to no planning for the livability of our section of Banksia Grove. We currently have a lovely area which we enjoy and the plan has no thought but to how many houses can be put into the area.</p> <p>It's great there is a primary school but there is not much of anything else.</p> <p>I would like to see the whole of lot 5 bushland completely kept. I have seen kangaroos, eagles nests, owls, blue tongue lizards and an array of beautiful wildflowers when myself and my partner have walked through that particular bush. It brings a livability factor and is great for mental wellbeing of everyone in our area.</p> <p>I completely agree with the proposal put forward by the group 'Friends of East Wannon' (foew.com.au). It shows consideration for the environment and livability of</p>	The proposed LSP is generally consistent with the EWDSP in terms of the type of land uses proposed, A recommended modification will be to include a local centre as identified for Precinct 8 in the EWDSP. Also refer to Friends of East Wannon generic submission – Submission 8.	A recommended modification will be to include a local centre as identified for Precinct 8 under the EWDSP.

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	<p>current residents with better park/green spaces planning and the need for better facilities planning other than petrol stations and fast food outlets.</p> <p>I believe developers should be held more accountable. Even the way the Coles/woolworths shopping centers on Joondalup drive are completely split and need a short drive if people need to shop at both areas, has shown such poor planning for residents.</p> <p>We deserve better so the area of Banksia Grove can be a desirable place to live. I hope our councillors advocate for their residents and reject this current plan and demand better.</p>		
22.	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p> <p>Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks.</p> <p>Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment.</p> <p>https://foew.com.au/precinct-8-structure-plan/</p>	Friends of East Wanneroo generic submission – please refer to response for Submission 8.	A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.

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	<p>proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p> <p>Also how many none private residences are planned</p>		
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28.			
	<p><u>Object</u></p> <p>I would like to express my concerns regarding the proposed precinct 8 ranch road local structure plan</p>	<p>The EWDSP has Coogee Road as one of the key east west connectors for the broader DSP area, to be upgraded as a Neighbourhood Connector. It is</p>	<p>It is recommended that the locational criteria for residential densities</p>

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	<p>First and foremost, in my view I would like to see larger block sizes along the Southside of Coogee Road, with only the rear boundaries of these blocks on Coogee Road. This would provide a transition/buffer between current Coogee Road properties and full blown suburbia.</p> <p>Further to this I would propose that Coogee Road is not accessible to the Ranch road development. This is to ensure Coogee Road is not subject to an increase in traffic. Our area is primarily or was supposed to be an Equestrian area, we are already subject to increase in traffic due to people from Suburbia coming to the area treating the Bridal Trail as an off the lead dog exercise area.</p> <p>Putting these controls in place would help ensure residents maintain their current lifestyle and ensure the area is kept as a safe place to carry out equestrian activities as the area was intended</p> <p>Second concern is in regard to Excessive Destruction of Endangered Bushland Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Resulting in Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>I would like to see the plan amended to retain 100% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological</p> <p>Final Comments</p> <p>I would request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve the current residents of Coogee Road. We deserve to keep our lifestyle and not be affected by this development.</p>	<p>also quite possible that Coogee Road might be identified to be upgraded to a transit corridor once the planning had been finalised between PTA and DPLH.</p> <p>As such Coogee Road reserve will provide a substantial buffer between the existing Rural Residential lots to the north and the future suburban development to the south. The future Coogee Road design may eventually be a dual carriageway with a median and have a substantial reserve width. This would ensure that there is no direct impact on the existing Rural Residential development.</p> <p>The LSP proposes a density range of 30 – R60 for the suburban neighbourhood which falls within the specified EWDSP density ranges. The R30 lots could be located along Coogee Road as they are the larger ones. The level of direct access to Coogee Road will only be known once its classification and function had been established. Also refer to Friends of East Wanneroo generic submission – Submission 8.</p>	<p>specified in Part 1 of the LSP be refined to facilitate increased housing diversity. As part of this the larger R30 lots are suggested to be located along Coogee Road.</p>
29.	<p><u>Object</u></p> <p>I would like to express my concerns regarding the proposed precinct 8 ranch road local structure plan</p> <p>First and foremost, in my view I would like to see larger block sizes along the Southside of Coogee Road, with only the rear boundaries of these blocks on Coogee Road. This would provide a transition/buffer between current Coogee Road properties and full blown suburbia.</p> <p>Further to this I would propose that Coogee Road is not accessible to the Ranch road development. This is to ensure Coogee Road is not subject to an increase in traffic. Our area is primarily or was supposed to be an Equestrian area, we are already subject to increase in traffic due to people from Suburbia coming to the area treating the Bridal Trail as an off the lead dog exercise area.</p> <p>Putting these controls in place would help ensure residents maintain their current lifestyle and ensure the area is kept as a safe place to carry out equestrian activities as the area was intended</p> <p>Second concern is in regard to Excessive Destruction of Endangered Bushland</p>	<p>Refer to responses to Submission No.28</p>	<p>It is recommended that the locational criteria for residential densities specified in Part 1 of the LSP be refined to facilitate increased housing diversity. As part of this the larger R30 lots are suggested to be located along Coogee Road.</p>

	Summary of Submission	Administration Comment	Recommendation
	<p>Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Resulting in Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>I would like to see the plan amended to retain 100% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological</p> <p>Final Comments</p> <p>I would request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve the current residents of Coogee Road. We deserve to keep our lifestyle and not be affected by this development.</p>		
30	<p><u>Object</u></p> <p>As a resident of Mornington Drive, Banksia Grove, directly opposite the proposed development of Precinct 8/Lot 5 bushland, I strongly object to the proposed development changes, with a particular focus on the following issues:</p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>I live directly opposite Lot 5 bushland and for many years myself and my family have enjoyed the quiet simplicity of living close to this natural environment. Both in terms of aesthetic benefits but also the mental health benefits that come from living close to nature. The proposed destruction of this high-quality, irreplaceable bushland strongly upsets and angers my family. This bushland is one of few existing areas that are crucial for endangered species within the Western Australia. We often sit and watch the Carnaby Cockatoos, the Red-tailed Cockatoo, Yellow tailed and white tailed Cockatoos. We also regularly see grey and brown kangaroos who have settled and are rearing their young in this area of bushland, and most importantly, there are Eagles nesting and circling above the south west section of lot 5, and, to my knowledge, under the Wildlife Conservation Act, is it not illegal to move this bird of prey and its nest?</p> <p>Recently my father was diagnosed with Alzheimer's disease which has had a huge impact on our family. With this in mind, we have recently added a second storey on our house for my elderly parents to live in to keep them closer when the inevitable support will be much needed. This took their life savings to pay for this project with the knowledge that they would live out their senior years opposite a natural environment that would both stimulate them and provide relaxation and positive mental health benefits. It would be devastating for them to sit on their balcony, which is their only outside space, and watch the destruction of this beautiful environment when they have paid such a high price both financially and personally.</p> <p>In addition, the destruction of forests and bushland is having a huge impact on native animals. To destroy this bushland would be detrimental to this ecosystem and for the City of Wanneroo to allow this would be a huge biodiversity loss and would question the City's integrity and commitment to sustaining important ecosystems which can never be replaced.</p>	<p>Please refer to the Friends of East Wanneroo submission – Submission 8.</p> <p>Regarding what the POS proposed in the Precinct 8 LSP offer, refer to the Landscape Masterplan for the vision and conceptual manner in which these spaces deliver a balance between active and passive (conservation) open space. This will offer future residents access to a range of open space options, from passive bushland pockets, walking trails through retained vegetation, playgrounds, all the way to active ovals for sporting pursuits - enhancing their quality of life and amenity Also refer to Friends of East Wanneroo generic submission – Submission 8.</p>	No modifications required.

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	<p>Indeed, such a large loss of flora and fauna would have negative effects on the community's mental health, the area's temperature regulation, water retention, soil health, and biodiversity.</p> <p>I agree with the Friends of East Wanneroo's proposal to amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Currently, there are insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p> <p>This lack of open spaces significantly reduces the community's quality of life. There are a lack of spaces for outdoor activities and events and inadequate regional parks and the solution provided by the developer has not provided an adequate solution to this issue.</p> <p>A solution would be to create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events, in line with the Friends of East Wanneroo's proposal.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Additionally, there are insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>This impacts both physical and mental health, causes a lack of youth engagement and thus a spread of crime issues.</p> <p>I am in agreement with the Friends of Wanneroo's proposal to develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate, is detrimental to the environment and neglects key areas essential for the region's development and resident well-being. I request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		
31			
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42.	<p><u>Object</u></p> <p>The proposal requires more retention of natural bush, more parks areas, more community facilities such as recreation Centre, pub, swimming pool Centre.</p>	Refer to Submission No.8 - it is noted that currently the LSP does provide well above what is required under State government policy The proposed primary school is intended to be co-located with playing fields within the adjoining public open space (POS) to its north	It is recommended that the area of the Unrestricted POS (POS 9) that adjoins the primary school be increased to a minimum 5 ha in size and be reconfigured to a rectangular shape to sufficiently cater for future community needs within Precinct 8.
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44.	<p><u>Object</u></p> <p>While I am generally supporting of the advertised proposal to develop precinct 8, that support is conditional and subject to having my following matters addressed.</p> <p>Upon review my lot 3 combined with other lots (lot 4 & 5 Mornington drive, Lot 250 Ranch Road and Lot 101 & 102 Coogee Road) in my precinct comes to a total of almost 41ha. Removing land allocations for the primary school, drainage and the P&R reserve, the net is 35 ha. With 4.5ha of public open space allocated to this land parcel, this would result in an average of 13% allocation. In a rough estimation, Lot 3 contributes 2.9ha out of the 4.5ha public open space. This is over a third of Lot 3's land holding, contributing a significant disproportion of almost two thirds of total public space of the sub precinct. This represents a gross inequity, lowering the value of my family's holding.</p> <ul style="list-style-type: none"> •Lot 4,5 & 102 allocates under 7% of its holding to public open space. •Lot 101 allocates almost 13% of its holding to public open space. •Lot 250 has nil public open space of its holding allocated. •Lot 3 (My holding) is over allocated at 36% of its holding. <p>We understand that the local precinct 8 developer contribution scheme was not considered and therefore the usual mechanism for equitable distribution of public open space is not available.</p> <p>We therefore ask that the City mandates as part of the LSP approval and subsequent subdivision approval process that Private Landowner Agreements are required to compensate my family the owners (V H Tran & T H Ma) of Lot 3 from those owners in the sub-precinct who are deficient in their public open space contribution (owners that allocated under 13% of their land). Approvals should not be granted until these private landowner agreements area in place.</p>	<p>The applicant provided the following response: <i>We would support a private cost sharing agreement between the landowners within this sub-precinct to ensure this landowner is fairly compensated for providing the shared primary school oval, notwithstanding this equates to over the 10% requirement under LN.</i> <i>Giving the limited scope of what is required to be funded, we do not support or suggest the need for a local development contributions plan, and an agreement will be a far more efficient and cost-efficient tool.</i></p> <p>Administration is of the opinion that landownership is significantly fragmented and is therefore likely to result in inequitable distribution of POS on individual landowners</p>	<p>It is recommended that Part 1 of the LSP be modified to require a local DCP (or other satisfactory arrangement) to facilitate the coordination of the required infrastructure between al the landowners.</p>

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	<p>The Private landowner agreements should compensate Lot 3 landowners (my family) for the englobo value of the excess land at the date of the ceding of the POS, as well as the proportional embellishment cost and developer maintenance costs for the first 2 summers.</p> <p>If these Private Landowner Agreements cannot be enforced, then the City has no other alternative but to introduce a Precinct 8 developer contribution scheme in order to evenly distribute POS contribution including the cost of land, embellishment and maintenance.</p>		
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	<p><u>Support</u></p> <p>Having reviewed the draft Precinct 8 LSP, Stockland are supportive of the proposal, with the following key matters outlined for the City's consideration.</p> <p>Precinct Interface and Integration</p> <p>Stockland's Precinct 15 LSP has been prepared in accordance with the EWDSP and the provisions of Schedule 2 Part 4 of the Planning and Development (Local Planning Scheme) Regulations 2015.</p> <p>The plan provides for an integrated and coordinated approach to the delivery of urban land uses and infrastructure with an expected dwelling yield of approximately 3,200 dwellings plus a Land Lease Community, and key community infrastructure including regional playing fields, regional open space, a railway station and transit corridor, a neighbourhood centre, a high school and two primary schools.</p> <p>Given the location of the two precincts, their interface and integration should be one of the key considerations in the assessment of the LSP. Transit Corridor Alignment</p> <p>A key element of the EWDSP is the provision of a 'transit corridor' that will accommodate future public transport services through the East Wanneroo area. Under the EWDSP, the transit corridor is proposed to extend from Franklin Road in the south to Flynn Drive and beyond in the north, through Precinct 15 on a north-south alignment, connecting back to Banksia Grove via Neaves Road in the north.</p>	<p>The Precinct 8 LSP successfully responds to adjoining LSP's in terms of interface and integrated, however the alignment and design of the transit corridor remains unresolved.</p> <p>Staging and servicing cannot be controlled by the City, therefore, once the individual LDP's had been approved, this will be largely market driven, The EWDSP staging plan shows that development will occur generally from west to east, with Precinct 8 in Stage 1.</p> <p>The one primary school provided meets the OP 2.4 standards and is supported by DOE, who reserves the right to review the public school planning for the area should there be any further modifications to density or zoning that will result in an increase in student demand.</p>	<p>No modifications required.</p>

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	<p>While the transit corridor alignment was advertised and approved in the EWDSP in 2021, the design requirements and final alignment of the transit corridor have not yet officially been confirmed by the Department of Planning, Lands and Heritage (DPLH) or the Public Transport Authority (PTA). It is our understanding that PTA are considering an alternative alignment than that depicted in the EWDSP, by shifting the transit corridor further to the east as it extends northwards within Precinct 7 and curving it westwards within Precinct 15 to connect to Banksia Grove via Coogee Road, on Precinct 8 and 15's northern boundaries. We have been engaging with DPLH and the developers of Precincts 7 and 8 on this matter and understand that there will be further opportunity to provide feedback on the potential revised alignment and any implications there might be in relation to structure planning and project delivery.</p> <p>It is to be noted that the Precinct 15 LSP has been designed based on the alignment as shown on the approved DSP and significant work has gone into designing around this alignment. The State Government led DSP has been approved since 2021, with developers since entering into acquisition agreements based on the proposed alignment. Coordination between planning and infrastructure is therefore imperative, to ensure there is no adverse impact on projects delivery, and therefore housing supply, in the East Wanneroo area.</p> <p>Ahead of finalising the Precinct 8 LSP, it will be necessary to confirm the final alignment (or make provision for its future confirmation) and facilitate any required integration between the two precincts.</p> <p>Precinct interface at Mariginiup Road</p> <p>An important interface point between the two precincts occurs at Mariginiup Road, to the west of Precinct 15 and the east of Precinct 8. It is understood that the Water Corporation intends to undertake works along this road reserve in the short term to facilitate the Alkimos Desalination Plant Trunk Main.</p> <p>As part of implementing both the Precinct 8 LSP and Precinct 15 LSP as subdivision stages of development, it will be necessary to confirm proposed earthworks levels at the interface between the two precincts, and address the matter of responsibility to fund and deliver the future road infrastructure for Mariginiup Road, following completion of Water Corporation's works.</p> <p>Schools</p> <p>Stockland have engaged with the Department of Education (DoE) on provision of schools in Precinct 15, taking into consideration the combined catchment planning for Precincts 7, 8 and 15. Across the three precincts, the EWDSP's requirement for five (5) primary schools and two (2) high schools has been met. With its estimated dwelling targets of approximately 3,200, Precinct 15 meets the relevant school provision requirements (1 per 1500</p>		

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	<p> dwellings). With estimated dwelling targets of approximately 2,500, Precinct 8 as a standalone precinct does appear to have a shortfall in primary school provision as per DoE's school provision requirements.</p> <p>It is noted that the Precinct 8 LSP refers to existing capacity within a nearby primary school to contribute towards catering for the primary school needs of the anticipated 2,500 dwellings in Precinct 8. Detailed information on the exact capacity of this school over next 5-10 years has not been disclosed in the LSP and we submit that it is integral for this matter to be critically analysed by the City, DPLH and Department for Education to ensure that there actually will be capacity (over the next 5 – 10 years) within this school to cater for the primary school needs from Precinct 8.</p> <p>It is noted that the Precinct 8 LSP refers to existing capacity within a nearby primary school to contribute towards catering for the primary school needs of the anticipated 2,500 dwellings in Precinct 8. Detailed information on the exact capacity of this school over next 5-10 years has not been disclosed in the LSP and we submit that it is integral for this matter to be critically analysed by the City, DPLH and Department for Education to ensure that there actually will be capacity (over the next 5 – 10 years) within this existing school to cater for the primary school needs from Precinct 8.</p> <p>The overall catchment planning for the three precincts (7, 8 and 15) will be considered in finalising the location of schools within Precinct 15.</p> <p>Precinct Staging and Servicing</p> <p>The EWDSP outlines three indicative stages (broad timing) of anticipated development across the precincts, moving in a broadly west to east direction. The EWDSP staging is indicative only and premised on the cost effectiveness of an eastward extension of existing water, wastewater, and power services from existing suburbs along the western edge of the EWDSP area. The EWDSP states that the take-up of existing servicing capacity will be on a 'first come, first-served' basis until exhausted, with additional capacity being brought on-line by service providers in response to market demand.</p> <p>Under the EWDSP, Precinct 15 has been indicatively identified in 'Stage 2 (2031-2051)', reflective of the development front extending from the west, via Precinct 8, which is identified as 'Stage 1 (2021-2031)'. Notwithstanding this, the EWDSP acknowledges that given the fragmented land ownership across the EWDSP area, precincts where land consolidation has occurred may proceed ahead of the development front. It is to be noted that Precinct 15 represents a consolidated parcel of land with only a handful of landowners, with Stockland having control over approximately 85 per cent of this land. The EWDSP states that in these situations the proponent should demonstrate that adjacent precincts are not disadvantaged.</p> <p>Given the common issues and interrelationships between the precincts, there is a need for ongoing collaboration between the key development groups in</p>		

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	<p>these precincts, as well as State Government agencies, with a view to enable the delivery of critical servicing infrastructure to unlock development in these precincts in a manner that is fair and equitable. Summary</p> <p>To summarise, Stockland Development Pty Ltd is supportive of the Precinct 8 LSP, with the key points raised in this submission for Council's consideration during its assessment of the LSP being:</p> <ul style="list-style-type: none"> Consideration should be given to the interface and integration between Precincts 8 and 15 to ensure alignment and consistency under each LSP, including: <ul style="list-style-type: none"> Alignment of road and transit corridor connections between the precincts Overall school catchment area planning for Precincts 7, 8 and 15 The Transit Corridor State Government-led initiative requires timely resolution ahead of finalisation of the draft LSPs, noting that each precinct's design has been based on the alignment as shown on the approved DSP. Coordination between planning and infrastructure is therefore imperative, to ensure there is no adverse impact on project delivery, and therefore housing supply, in the East Wannon area. <p>There is a need for ongoing collaboration between the key development groups in Precincts 7, 8 and 15, as well as State Government agencies, with a view to enable the timely delivery of critical servicing infrastructure to unlock development in these precincts.</p>		
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	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Building on existing farmland.</p> <p>Building on existing land used for farming, or the cultivation of crops will affect the employment in the local area. The proposed development does take into account that the land currently used for farming has been cultivated for decades. Soil conditioners, additives etc have been added over these years to create a soil to enable a good production. Once this land used for farming has gone it cannot be replaced. There are many lots nearby such as the Northern side of Coogee Road, Greenvale place and</p>	<p>Friends of East Wannon generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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	<p>Lestee that do not have good soil and nothing can be grown there. This area would be better for building on, not the farm or bushland.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being.</p> <p>We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structureplan/</p>		
76.			
	<p><u>Object</u></p> <p>We moved to the area to ensure our way of life and lifestyle. Adding more housing, particularly aimed at high density and lower demographics would not only increase traffic in our semi rural area, but increase the potential for crime and pollution, both noise and otherwise. I'm not apposed to large block subdivision but not high density housing.</p>	<p>East Wanneroo has long been planned for residential development and is a key area in helping address the State's current residential crisis. Precinct 8 will not be considered 'high density' but will offer a range of lots sizes suiting a diverse lifestyle choice and demographics.</p> <p>Despite anti-social behaviour not being a planning consideration, there is no basis to view the Precinct 8 LSP as a catalyst for anti-social behaviour, it could quite likely be the opposite that by having future residents and activity will result in more surveillance and less anti-social behaviour.</p>	No modifications required.
77.			
	<p><u>Object</u></p> <p>I object to building in this land, it's ecological importance is necessary for various species of animals. Why advertise you are planting trees as a city for climate change & species conservation & then a few days later tear down hundreds of old trees! It just seems foolish & dumb.</p>	<p>The LSP aims to strike a balance between environmental outcomes and offering a place for people to live. Please refer to the Friends of East Wanneroo submission (Submission 8) for more detail on this matter.</p>	No modifications required.
78.			
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79.			
	<p><u>Support</u></p> <p>I fully support the structure submitted by Rowe Group. It will provide much required development to the area and be of betterment to the Community and surrounding suburbs.</p>	Noted	No modifications required.
80.			
	<p><u>Object</u></p> <p>The area in question whilst relatively close to urban Banksia is full of natural beauty and habitat, home to many native wildlife.</p>	Refer to submission 77	No modifications required.
81.			
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83.			
	<p><u>Object</u></p> <p>Stop building on whats left of our local bush lands. Kicking out small farmers. Wrecking our suburbs. Not only that the traffic increases will be terrible.</p>	<p>The area is already approved for urban development under the EWDSP. The proposed LSP is generally consistent with the EWDSP.</p> <p>The LSP aims to strike a balance between environmental outcomes and offering a place for people to live. Please refer to the Friends of East Wanneroo submission (Submission 8) for more detail on this matter.</p> <p>It is also acknowledged that urban development at the scale of what is proposed in the EWDSP area will be disruptive for current landowners as a result of the works that will occur to make the LSP's for the various precincts realise, including noise, dust and increased traffic as the development progresses through the area in different stages over time.</p>	No modifications required.
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91.			
	<p><u>Support</u></p> <p>With the housing crisis we need to continue to build to make sure we have sufficient housing for this growing economy!</p>	Agreed	No modifications required.
92.			
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	<p>Object</p> <p>As a resident of Mornington Drive, Banksia Grove, directly opposite the proposed development of Precinct 8/Lot 5 bushland, I strongly object to the proposed development changes, with a particular focus on the following issues:</p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>I live directly opposite Lot 5 bushland and for many years myself and my family have enjoyed the quiet simplicity of living close to this natural environment. Both in terms of aesthetic benefits but also the mental health benefits that come from living close to nature. The proposed destruction of this high-quality, irreplaceable bushland strongly upsets and angers my family. This bushland is one of few existing areas that are crucial for endangered species within the Western Australia. We often sit and watch the Carnaby Cockatoos, the Red-tailed Cockatoo, Yellow tailed and white tailed Cockatoos. We also regularly see grey and brown kangaroos who have settled and are rearing their young in this area of bushland, and most importantly, there are Eagles nesting and circling above the south west section of lot 5, and, to my knowledge, under the Wildlife Conservation Act, is it not illegal to move this bird of prey and its nest?</p> <p>Recently my father was diagnosed with Alzheimer's disease which has had a huge impact on our family. With this in mind, we have recently added a second storey on our house for my elderly parents to live in to keep them closer when the inevitable support will be much needed. This took their life savings to pay for this project with the knowledge that they would live out their senior years opposite a natural environment that would both stimulate them and provide relaxation and positive mental health benefits. It would be devastating for them to sit on their balcony, which is their only outside space,</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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	<p>and watch the destruction of this beautiful environment when they have paid such a high price both financially and personally.</p> <p>In addition, the destruction of forests and bushland is having a huge impact on native animals. To destroy this bushland would be detrimental to this ecosystem and for the City of Wanneroo to allow this would be a huge biodiversity loss and would question the City's integrity and commitment to sustaining important ecosystems which can never be replaced.</p> <p>Indeed, such a large loss of flora and fauna would have negative effects on the community's mental health, the area's temperature regulation, water retention, soil health, and biodiversity.</p> <p>I agree with the Friends of East Wanneroo's proposal to amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Currently, there are insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p> <p>This lack of open spaces significantly reduces the community's quality of life. There are a lack of spaces for outdoor activities and events and inadequate regional parks and the solution provided by the developer has not provided an adequate solution to this issue.</p> <p>A solution would be to create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events, in line with the Friends of East Wanneroo's proposal.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Additionally, there are insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>This impacts both physical and mental health, causes a lack of youth engagement and thus a spread of crime issues.</p> <p>I am in agreement with the Friends of Wanneroo's proposal to develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate, is detrimental to the environment and neglects key areas essential for the region's development and resident well-being. I request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		
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	<p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/ The plan proposed is poorly thought out and inconsiderate to the current members of this community. This includes all the above mentioned concerns. I chose this area because I loved it for the nature, the space and community feel. I don't want our community to be over looked and</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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	<p>our opinions ignored because of big corporate businesses coming in and just making decisions on our behalf without any consideration to the concerns raised.</p> <p>Were all about improving the environment, health and supporting mental health. Increasing upon our community vibe not destroying it. Just filling up the land and cramming more properties in just because is not justifiable. It does not support what our community is about. Thanks for listening.</p>		
108.			
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110.	<p><u>Object</u></p> <p>-</p>	-	No modifications required.
111.			

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113.			
	<p><u>Object</u></p> <p>The destruction of native flora and the damage to local fauna is unacceptable without greater consideration to the impact not just on those points but also these are more options available that will actually benefit the area.</p>	<p>This submitter raises similar issues as the Friend of East Wanneroo submission, please refer to Submission 8 response above.</p>	<p>No modifications required.</p>
114.			
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118.			
	<p><u>Comments</u> Lot 5 should be remained as a bushland area, with fire breaks already in place it would be a great place to put paths through, it is important to note this bushland is full of native orchids, animals and is a place many children of Mornington drive already play in and people use as a walk trail. Consideration to keep this area bushland should be taken. Further with the increasing population of Banksia Grove and increased crime rates over the years appropriate community engagement opportunities should be considered including but not limited to a community hall, engagement speaking from councilors, walking tours and events. Development is crucial, however increasing community engagement is important to foster a healthy and safe area for people to live.</p>	Refer to Submission responses to Submissions 5 and 8.	No modifications required.
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	<p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wannon. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wannon's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wannon Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wannon. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		<p>POS design requirements specified under LPP 4.3.</p>
125.			
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	<p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p> <p>Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		
126			
	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland</p> <p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo.</p> <p>Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks.</p> <p>Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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	<p>Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>		
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128.	<p><u>Comments</u></p> <p>There needs to be a better balance of public open spaces, housing and Infrastructure (Shops, Taverns, Medical centres etc). The plan does not take in consideration this balance and the risk of further harm to the already endangered Carnaby Cockatoo. I agree with the statement and issues raised below. Issue One: Excessive Destruction of Endangered Bush land Problem: Destruction of high-quality, irreplaceable bush land crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bush land, adding natural pathways to enhance resident interaction and maintain ecological benefits. Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bush land and a primary school playing field to benefit the whole community and attract events]</p>	Refer to submission response No. 21 and 8	No modifications required
129.	<p><u>Object</u></p> <p>We support the subdivision. The only concern is the house along Coogee Road with the extension (future widening) of Coogee Road.</p>	The EWDSP has Coogee Road as one of the key east west connectors for the broader DSP area, to be upgraded as a Neighbourhood Connector. The City's LPP 5.3 for East Wanneroo requires minimum road reserve widths for Neighbourhood Connector B roads at 21.6m, Neighbourhood Connector A (Front Loaded) at 25 m and Neighbourhood Connector A (Rear Loaded) at 30m. It is also quite possible that Coogee Road might eventually be identified to be upgraded to a transit corridor once this planning had been finalised between PTA and DPLH.	No modifications required
130.			

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131.			
	<p><u>Object</u> -</p>	-	No modifications required
132.			
	<p><u>Object</u> Anti-Social behaviour</p>	<p>Despite anti-social behaviour not being a planning consideration, there is no basis to view the Precinct 8 LSP as a catalyst for anti-social behaviour, it could quite likely be the opposite that by having future</p>	<p>No modifications required</p>

No.	Summary of Submission	Administration Comment	Recommendation
		residents and activity will result in more surveillance and less anti-social behaviour.	
133.			
	<p><u>Comments</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>	Friends of East Wanneroo generic submission – please refer to response for Submission 8.	A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.
No.	Summary of Submission	Administration Comment	Recommendation
134.			
	<u>Object</u>		

No.	Summary of Submission	Administration Comment	Recommendation
	<p>I do not support the proposed changes to my local area. The residents of this area have come together to create a positive community, and as you will see across comments such as these, this community does not want or support these changes. We can see how these changes will negatively impact this community, and the individuals and families who have made this area their home.</p> <p>I sincerely hope that our council will hear the thoughts, opinions, concerns and needs of the members of the community who stand to be impacted by such changes. Furthermore, I hope that our council will choose to support it's residents and members of the community, and act in their best interest. This is the only way that we can continue to grow and improve and build something that can have positive outcomes for this community, now and into the future.</p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo.</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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136.			
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137.			
	<p><u>Comments</u></p> <p>I think the City of Wanneroo need to come up with another proposal that sees more prime bush land kept for our endangered flora and fauna and a variety of block sizes put on the areas to stop demographic issues such as the ones we have in Banksia Grove.</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p> <p>The LSP proposes a density range of 30 – R60 for the suburban neighbourhood which falls within the specified EWDSP density ranges.</p>	No modifications required
138.			
	<p><u>Object</u></p> <p>Destruction and devastation to our beautiful flora and fauna. Lost habitat and homes to our cockatoo's. Increased traffic to our once quite streets will now be turn onto main roads. Not enough for our children/youth to keep then active. Green tree covered parks. Picnic/barbecue family friendly area's.</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p> <p>It is also acknowledged that urban development at the scale of what is proposed in the EWDSP area will be disruptive for current landowners as a result of the works that will occur to make the LSP's for the various precincts realise, including noise, dust and increased</p>	No modification required.

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		traffic as the development progresses through the area in different stages over time.	
139			
	<p><u>Object</u> Objections include the following topics:</p> <ol style="list-style-type: none"> 1. The development of important regional ecological linkage ID 12 2. Human impact and disturbance of native fauna in built up / developed areas 3. Proposed POS plans 4. Number of proposed schools and sporting fields in relation to both existing and proposed surrounding urban areas 5. Proposed tree species for streetscapes, verges and public open spaces 6. The City of Wanneroo's "...influential role in ... protecting biodiversity..." and commitment to "maintaining and improving the conservation of our local biodiversity." <p>1. The development of important regional ecological linkage ID 12 East Wanneroo's proposed Precinct 8 encompasses parts of an important regional ecological linkage, Link ID 12, within its boundaries. This linkage is already fragmented by existing urban developments to the south, as well as potentially being fragmented further by other proposed development sites including that of other future East Wanneroo Precincts including Precinct 7, and other smaller developments that may not necessarily make up the greater East Wanneroo District Structure Plan.</p> <p>Though this linkage, Link ID 12, passes directly through the center of Lake Mariginiup, when this lake is full through winter periods, most fauna that would use this linkage regularly, would pass around the lake in order to move through the area. It is clear as part of the draft structure plan within Appendix 1, that allowance has been made for a "Parkland Link", which may be considered suitable in some instances as replacement for fauna passage through the development site, however, as this "link" is fragmented approximately four times by proposed roads, and part of this link is entirely made up of road to the northernmost segment, it is extremely unlikely that native fauna will choose to use this passage in order to move in a north-south manner through the proposed development, and those that do choose, or are forced to use this "link" risk severe injury and death due to vehicle collisions. It can also not be assumed that fauna will simply "go around" the development site either, as Precinct 15 of the East Wanneroo Development is proposed for the immediate east of Precinct 8, Precinct 7 is proposed for the immediate south, and the suburbs of Banksia Grove and Tapping, both abutt the immediate West of the proposed development site.</p>	<p>.</p> <p>The proponent notes that the ecological linkage is already fragmented by partially to fully cleared rural blocks, a pine plantation (now burnt) and Coogee Road at the northern end.</p> <p>The question could be asked what type of fauna currently uses the fragmented ecological linkage moving between Mariginiup Lake and the two-thirds cleared Lake Adams to the north - unlikely to be ground-dwelling fauna. Small birds perhaps. The proposed Parkland Link would still be able to be used by birds to move north and south through the area.</p> <p>The proponent further states that disturbance of native Fauna is an unfortunate but unavoidable outcome of urbanisation but it should be noted that Precinct 8 already contains a large area of cleared land, market gardens and other rural activities. Cats and foxes already exist in the area, as they do in all rural and urban areas.</p> <p>As outlined previously, East Wanneroo has been planned for residential development for many years, and while the Precinct 8 LSP has been designed to keep any impact to remnant bushland to a minimum, it must be recognised that some impact, however minimal, will occur.</p> <p>The proponent notes that the submitter is partly correct in that the City has an important role in land management, this is only one element and the City is also tasked with delivering future residents, parks and services with Precinct 8 LSP fulfilling a critical role in this regard. The LSP strikes a balance between environmental outcomes and offering future residents parks for their use. The applicant further advises that the use of turf has also been selectively chosen, again considering the need for open active spaces and other more passive activities. The vision for the POS areas is set out in the Landscape Masterplan.</p>	<p>No modifications required</p>

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	<p>In order to rectify these potential issues, consideration should be made to widen the already proposed "Parkland Link" and remove as many as possible, if not all, intersecting roads, paths and proposed dwellings in order to allow fauna to safely pass between north and south of the proposed development site.</p> <p>Another consideration, is utilising the already existing, and proposed retained bushland areas, by linking these with wider parkland areas, revegetated parklands and removal of proposed intersecting roads, paths and dwellings.</p> <p>2. Human impact and disturbance of native fauna in built up / developed areas Often native fauna will avoid areas with significant human activity. The proposed POS areas within the Precinct 8 development site are generally surrounded or fragmented by either roads, residential housing or schools. As a result of fragmentation and isolation of already small percentages of remnant, healthy bushland, native fauna populations in the area are likely to dwindle, proposed retained bushland health will decrease and native fauna and flora mortality rates would increase due to both road incidents, introduced species predation and vandalism.</p> <p>As is the case in most, if not all, residential developments, pets such as cats and dogs are likely to be introduced to the area as people move into new homes. As there are no legal restrictions or penalties in the City of Wanneroo for not containing cats to a premises, this is likely to have an enormous negative impact on the condition and populations of the local fauna that currently live within the proposed development site as it is known that outdoor cats can decimate near entire populations of animals within a few nights. (see example articles below)</p> <p>Example 1 According to Australian Geographic "... cats kill about 3-4% of Australia's birds each year." See Australian Geographic article below https://www.australiangeographic.com.au/topics/wildlife/2017/10/cats-kill-a-million-birds-a-day-according-to-new-study/</p> <p>Example 2 (2018 Fairy Tern nesting site on Mandurah's Peel-Harvey Estuary mouth - single, white cat results in death of 6 adult fairy terns, 40 chicks, and complete failure of entire colony's 111 nests between 26/11/18 - 12/12/18 See Australian Geographic article below https://www.australiangeographic.com.au/topics/wildlife/2019/08/a-single-cat-wiped-out-an-entire-colony-of-fairy-terns/)</p> <p>The amount of human activity, not only within the proposed POS areas, but the entire Precinct 8 development and proposed East Wanneroo District</p>	<p>The proponent points out that submission is incorrect in stating that only 6 schools are proposed across the entire East Wanneroo DSP area, with 5 already accounted for in the first 3 LSP's submitted to date. The DSP looks to create 6 high schools (not schools in total).</p> <p>Further to the submitter's concerns on co-locating open space with school (as done elsewhere in the City), this is exactly what is proposed by the Precinct 8 LSP, with a senior oval being position adjacent to the primary school.</p> <p>The Landscape Masterplan has set out a list of species (trees, shrubs, groundcovers & revegetation), outlining that these will largely be local species that are best suited for the local environment.</p>	

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	<p>Structure Plan, will likely have a huge negative impact on the existing local fauna and flora and the effectiveness of any remaining green spaces as potential feeding, foraging, nesting or breeding habitat that currently exists in the area, thus rendering them useless to all but people.</p> <p>3. Proposed POS plans It is well known that introduced predator species such as cats and foxes use man made lanes, tracks and paths in and around native bushland areas as easy access to hunt and capture native fauna including small birds, mammals and reptiles. In many of the proposed POS areas, and in particular around Mariginiup Lake, walking trails and paths have been proposed for the areas allowing for introduced species to use these paths conveniently for hunting. With the inclusion of high density residential housing within the proposed development, any retained vegetation and bushland will likely be degraded due to vandalism and residents venturing off proposed paths, and in turn creating additional tracks for introduced predatory species to use for hunting. See examples 1 and 2 of section 2. Human impact and disturbance of native fauna in built up / developed areas for more details. Along with the extensive walking trails and paths through these areas, understory and low shrubbery within proposed POS areas is minimal if existent at all, this will make it very difficult for our native fauna to seek protection or utilise these spaces as they would have prior to development for feeding, foraging and nesting. In addition to the above, the installation of turf at the extent of what is proposed in the draft plans will require extensive watering and fertilising to maintain an aesthetic that would be considered suitable to the proposed residential area. With the current climate condition and the possibility of future water shortages and droughts, the need for the amount of proposed turf should be reconsidered. The possibility of retaining and/or improving more than the proposed natural bushland areas currently drafted should be considered as an alternative to some of the proposed turfed areas, in turn this would assist in maintaining or improving biodiversity within the area, reducing water requirements, and preventing chemical run-off into the water table and surrounding wetlands and lakes. As stated in the City of Wanneroo "Local Biodiversity Plan 2018/19 - 2023/2024" <i>"Local government authorities play an important role in the protection and conservation of biodiversity. As land managers, land use planners, decision making authorities and developers, the City of Wanneroo plays an increasingly influential role in not only protecting biodiversity, but in engaging and educating the community in the value of biodiversity. The City of</i></p>		

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	<p><i>Wanneroo is strongly committed to maintaining and improving the conservation of our local biodiversity."</i></p> <p>As such, it is my understanding that, should these developments go ahead, the City of Wanneroo should be doing everything in its power to better the design and layout of these proposed developments to cater to the "globally recognised biodiversity hotspot" that occurs within the city.</p> <p>4. Number of proposed schools and sporting fields in relation to both existing and proposed surrounding urban areas</p> <p>According to the East Wanneroo District Structure Plan August 2021, the proposed number of schools within the indicative district plan of the entire East Wanneroo District is approximately 6 schools. However, according to Precincts 7 and 15's Landscape Masterplans 5 schools are already proposed for these two development sites alone, and with 1 more school proposed for Precinct 8, that accounts for the proposed school numbers within the East Wanneroo District within only 3 of 28 proposed precincts.</p> <p>With approximately 12 schools within the surrounding suburbs of Banksia Grove, Carramar, Tapping, Wanneroo, Hocking and Pearsall, there are already plenty of local school options available for potential future residents without the need for adding more to the area at the expense of existing flora and fauna.</p> <p>With school development comes the inevitable sporting fields/ovals. As mentioned in section 3. Proposed POS plans, the current climate condition and the possibility of future water shortages and droughts, should be considered when planning new developments and the need for the amount of proposed turf should be reconsidered due to its water requirements.</p> <p>In addition to this, the surrounding suburbs all contain some form of sporting field/oval adjacent to the existing schools within them, and with the proposed Precinct 15 sporting complex containing approximately 6 fields, not to mention the additional 2 that will inevitably be built with the proposed schools within the precinct, it is extremely unnecessary to add yet another sporting field to the area, when these types of open spaces are rarely used outside of school hours, and as a result will only be a waste of water and land. This land would be better put to use as revegetated, rewilded bushland in a bid to maintain and improve tree canopy, biodiversity and flora and fauna populations within the area as well as the greater City of Wanneroo. Fencing larger areas for conservation and creating a regional park in some of these areas similar to that of Yellagonga Regional Park should be considered in place of many of the East Wanneroo Developments.</p> <p>5. Proposed tree species for streetscapes, verges and public open spaces</p>		

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	<p>With the proposed Precinct 8 home to many native flora and fauna, consideration should be made to include Western Australian native tree and plant species along streetscapes and in POS's instead of Eastern state or exotic species in order to boost local biodiversity and assist in conservation of our endangered, vulnerable and threatened native fauna, while maintaining and improving local habitat.</p> <p>Non-Western Australian and exotic species that should be excluded or reconsidered from the proposed development include:</p> <ul style="list-style-type: none"> • Bauhinia blakeana (Exotic) • Callistemon citrinus (Non WA Native) • Callistemon viminalis (Non WA Native) • Cupaniopsis anacardioides (Non WA Native) • Delonix regia (Exotic) • Jacaranda mimosifolia (Exotic, invasive) • Lomandra longifolia (Non WA Native) • Lomandra tanika (Hybrid of Non WA Native) • Myoporum parvifolium (Non WA Native) <p>With the exclusion of exotic and non-local species, water requirements would be reduced and survival and mortality rates would improve due to Western Australian endemic and native species tolerances of local climate conditions. WA Native flora species would also provide food and habitat to local and endemic fauna species which would otherwise not be able to utilise non-Western Australian or exotic species.</p> <p>6. The City of Wanneroo's "...influential role in ... protecting biodiversity..." and commitment to "maintaining and improving the conservation of our local biodiversity." As mentioned previously in section 3, the City of Wanneroo's "Local Biodiversity Plan 2018/19 - 2023/2024" states the following:</p> <p><i>"As land managers, land use planners, decision making authorities and developers, the City of Wanneroo plays an increasingly influential role in not only protecting biodiversity, but in engaging and educating the community in the value of biodiversity. The City of Wanneroo is strongly committed to maintaining and improving the conservation of our local biodiversity and with such rapid growth now and into the future, it is vital that we continue to plan and manage in a sustainable manner to protect our precious natural assets."</i></p> <p><i>"Protecting the environment and these significant biodiversity values is one of the most challenging yet critical aspects of planning now and into the future,</i></p>		

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	<p><i>particularly in an area facing rapid development and urban sprawl. Adequate protection is needed at a local and state level to protect, retain and manage the natural environment...</i>"</p> <p>The City of Wanneroo has a significant role in the decision making and planning processes of developments such as these. However, the release of development plans after significant damage to flora and the displacement, death and injury of native fauna within the proposed Precincts 8, 7 and 15 development sites due to the Mariginiup bushfires, it is unclear as to how committed the city is to protecting, maintaining or improving our local biodiversity.</p> <p>Within this and other precincts of the East Wanneroo Development, it is known that endangered, threatened, vulnerable or priority species inhabit these areas. Black cockatoos, both Forrest Red and Carnaby's use these grounds for feeding and foraging, Snake Neck Turtles inhabit the wetlands and breed in the sedges, Quenda or Western Brown Bandicoot inhabit and feed in these areas and it was recently discovered, post Mariginiup fire, that Crowned snakes also inhabit some of the bushland within the proposed development sites.</p> <p>Organisations such as Tessa's Reptile Services, Native Animal Rescue, Kanyana Wildlife Rehabilitation Centre and Wildlife Care WA are all aware of the species that use this land and how the fires have affected them, however, if the City of Wanneroo approve this and other future East Wanneroo developments, there will no longer be anywhere suitable, that isn't set for future development, for the animals that were rescued from these sites and rehabilitated after the fires to be released back into.</p> <p>With Western Australia having the lowest tree canopy cover of any city in Australia as well as being the longest city in the world at over 150km from Two Rocks to Dawesville, we have an obligation to do everything we can in retaining and improving as much of our local bushland, mature trees and native fauna feeding and breeding habitat as possible. Australia's relentless need for urban sprawl is not something that will help with this, and so not only Precinct 8, but all 28 Precincts within the East Wanneroo District Development plan should be reconsidered and re-evaluated to ensure local biodiversity and protection of our native flora and fauna is at the forefront of further planning and decision making regarding the developments as these are only adding to our urban sprawl problem which in turn contributes to urban heat islands and the ever increasing rate of climate change.</p>		

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	<p>To conclude, despite my lack of support for this and other East Wanneroo developments due to the significant environmental impact on our local flora, fauna and biodiversity, so far Precinct 8 is the best yet for consideration made towards environmental impact, though I do believe the existing proposals can be improved upon more so in order to cohabitate with as much of, if not more, of the existing flora and fauna as possible through the following</p> <ul style="list-style-type: none"> • Retention of larger existing or rewilded/revegetated areas such as ecological linkages including Link ID 12 • Reducing or removing some or all human activity within and surrounding some POS/ green spaces and ecological linkages (retaining more natural/undisturbed areas than currently proposed), • Reduced turf areas in order to reduce water requirements, prevent chemical run-off from fertilisers into surrounding wetlands and water table, and provide more dense understory and shrubbery areas for the protection of smaller native fauna species, • Consideration for the impact introduced pest species such as cats and foxes have on native fauna species when residential developments encroach on native bushland areas, • Incorporating local and regional ecological linkages into the development plans with greater consideration for our "globally recognised biodiversity hotspots" through the inclusion of endemic and local Western Australian native flora rather than introduced, invasive, exotic and non-endemic species. 		

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	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structureplan/</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>

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141.	<p><u>Object</u> Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. You plan to destroy 10 ha of Banksia Woodlands (a threatened ecological community) and 4 ha of FCT20a which is listed by WA government as critically endangered. It would appear from the environmental survey that most of this is in vegetation that is in excellent to very good condition. This loss of native vegetation is also at odds with the State government's commitment in the Native Vegetation Policy to net gain. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits. Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We support the Friends of East Wanneroo's request that the council reject this proposal and consider a revised plan that incorporates solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>
142.	<p><u>Object</u> Concerns regarding East Wanneroo Precinct 8 - Ranch Road Environmental Assessment Report It is disappointing that the Environmental Assessment is not reflective of the current situation of the area. It is obvious that the Environmental Assessment was done before the November 2023 fire, and as such does not reflect the true picture of the area. Many of the reports in the Assessment are from desktop and previous assessments. Some are over 6 years old. I cannot see any that were from current onsite visits. This data is not a true state of the situation and as such HOW CAN PLANS BE MADE FOR THE WELFARE OF THE CURRENT WILDLIFE that have already been impacted? The Environment Assessment also does not require to note low conservation animals such as the Western Grey Kangaroo or some of the many different species of reptiles found at the location. It does not even mention the crown snake which is thought to only habit the southern areas of Perth yet was found within Precinct 8 during the wildlife recovery response post fire event. After the fires wildlife volunteers spent 10 weeks as a post bushfire recovery team walking most of the affected area. Over 300 species of wildlife were either found dead or needed euthanising. 200 were taken into care for rehabilitation but due to the future development cannot be returned to their homes. Wildlife Care WA inc have knowledge of currently over 175 Western Grey Kangaroos within precinct 8 yet there is no mention if these. It is VERY clear that volunteer wildlife rehabilitators</p>	<p>The proponent noted that it is fortunate that the surveys were done prior to the 2023 bushfire, otherwise assessments of vegetation types, condition and flora and fauna values would not have been able to be made after the fire. As a correction, the proponent further advised that there are not 300 species of wildlife in Precinct 8, but more likely 300 individual animals. Kangaroo management is commonplace and will be dealt with at subdivision stage, together with other fauna management prior to developments occurring. The proponent also sought to clarify that the South-western Snake-necked Turtle is not a Threatened species as suggested by the submitter, and Lake Mariginup and its buffer is not proposed for development. Section 5.7 of the Environmental Assessment Report comprehensively addresses fauna management. A Standard Vegetation and Fauna</p>	<p>No modifications required.</p>

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	<p>have a better understanding of the wildlife on site and their needs than the “experts” who were paid to undertake the assessment and prepare the report that the authorities are making decisions from Issues that MUST be addressed prior to development approvals</p> <p>· Fauna 5.7 Remaining impacts to native fauna can be managed through the standard Vegetation and Fauna. Management Plan as required as a condition of subdivision. The Vegetation and Fauna Management. Plans will include management measures for trapping and the relocation of terrestrial fauna prior to commencement of clearing and fencing of Parklands and vegetated POS areas to protect fauna. The management plan will include protocols and management measures to protect any nesting fauna such as Rainbow Bee-eaters and other small birds as well as the relocation of fauna disturbed during any clearing works.</p> <p>Q1 -What measures are being taken to protect and encourage the Western Snake Turtles nesting sites within the surrounding area of Lake Mariginiup? The fires impacted so significantly on the population in the area that they are now in the threatened category.</p> <p>Q2 - Does this statement mean that the cities Fauna Management policy will ensure the site will be fully fenced and in accordance with the Cities Fauna Management Policy Planning and Sustainability Local Planning Policy 3.3 - Fauna Management all fauna will be removed before any vegetation is cleared.</p> <p>Q3 - will this include the relocation of as many as possible by a reputable relocater?</p> <p>Q4 - Will there be a fauna spotter on site during all clearing to ensure safety of any remaining fauna?</p> <p>Q5 How will the fauna at Lake Marriginiup and little Lake Mariginiup be protected from both humans and the domestic pets that the development will bring into the area?</p>	<p>Management Plan would be prepared at future planning stages and will include management measures for trapping and relocation of terrestrial fauna prior to clearing, and fencing of Parklands and vegetated POS areas to protect fauna.</p>	
143.			
	<p><u>Support</u></p> <p>As a landowner in the area for nearly ten years, and seeing what the effect of the two major supermarkets are having on the family run, independent market gardener, we think this is a very positive outcome for this group of landowners and the area in general. It is becoming increasingly obvious that the area is becoming unviable as a fragmented market garden locality, and any opportunity to reposition the locality will be positive. Add to this that this is, in effect, the last near city large tract of undeveloped land that has potential to provide affordable public housing, and we see the proposal as a very good outcome for the landowners in the area and the state of WA. Affordable housing is in record low supply in the state and is a major problem now, and will continue to be so into the immediate future with international and interstate migration on the rise. As such we fully support this proposal and look forward to it being implemented as soon as possible so the area can help alleviate the shortage of housing crisis sooner rather than later. Finally we commend the proponents for their acknowledgement of the remnant natural bush land on the site and the proposals appetite for retaining this wherever possible, it is a major feature of this design in our opinion.</p>	<p>Noted.</p>	<p>No modifications required.</p>
144.			
	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland</p>	<p>Friends of East Wanneroo generic submission –</p>	

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	<p>Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo.</p> <p>Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity.</p> <p>Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces</p> <p>Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wannon.</p> <p>Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks.</p> <p>Solution: Create East Wannon's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning</p> <p>Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs.</p> <p>Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues.</p> <p>Solution: Develop facilities similar to Wannon Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments</p> <p>The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being.</p> <p>We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wannon.</p> <p>Please reference this page for further information, as I agree with its assessment.</p> <p>https://foew.com.au/precinct-8-structureplan/</p>	<p>please refer to response for Submission 8.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>
145.			
	<p><u>Support</u></p> <p>Given the inter-relationship between the subject precinct and our client's land, it has been determined to prepare a submission on the East Wannon Precinct 8 (Ranch Road) LSP. Given our clients stake in the immediately adjacent Precinct 9 and Precinct 15, and review of the draft LSP, consideration has been given to their interface and integration, as projected under the East Wannon District Structure Plan (EWDSP).</p> <p>After reviewing the draft precinct 8 LSP, Squarcini Group are supportive of the proposal, with the following key matters identified for the City's consideration:</p> <ul style="list-style-type: none"> • Precinct interface and integration • Transit Corridor Alignment • Provisioning of Schools • Staging and Servicing 	<p>Refer to response on Submission No. 74</p>	<p>No modifications required.</p>

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	<p>We appreciate the City's efforts in reviewing the proposed LPS, and the objective of aligning the City's planning framework with the State Governments and firmly believe that the draft LPS aligns with this. The following submission provides the basis of key supported components.</p> <p>1. PRECINCT INTERFACE AND INTEGRATION</p> <p>It is noted that the adjacent precinct 15 LSP has been prepared in accordance with the current EWDSPP and the emerging vision as detailed by the City, for the future development of East Wanneroo. The LSP covered a total of 310 ha and is estimated to house a population of 9,000-10,000 persons.</p> <p>This current plan provides an integrated and coordinated approach to the development of suitable urban land uses and infrastructure, with an estimated dwelling yield of 3,200 dwellings, key public open space, community facilities, a railway station, a neighbourhood centre and multiple schools of secondary and primary nature. The area provides an estimated 6.000m2 of commercial floor space to cater for the growing residential population in the area.</p> <p>Given the proximity of the two precincts, the interface and effective integration should be one of the key considerations during the assessment of the LSP.</p> <p>2. TRANSIT CORRIDOR ALIGNMENT</p> <p>In reviewing the proposal, it is of paramount importance for the City to consider the alignment of the transit corridor. This element is not only integral to the East Wanneroo Detailed Structure Plan (EWDSPP), but also crucial for the future public transport services in the East Wanneroo area.</p> <p>The proposed alignment, extending from Franklin Road to Flynn Drive and beyond, has significant implications for connectivity and accessibility within the region. It's worth noting that whilst the corridor alignment was advertised and approved in the EWDSPP in 2021, the design requirements have not yet been officially confirmed by the Department of Planning, Lands and Heritage (DPLH) or the Public Transport Authority (PTA). PTA is contemplating an alternative alignment, which could potentially impact the structure planning and project delivery.</p> <p>Therefore, a thorough review of the transit corridor alignment is essential to ensure that it aligns with the broader planning framework, facilitates seamless integration between precincts, and ultimately, does not adversely affect the project delivery and housing supply in the East Wanneroo area.</p> <p>3. PROVISION OF SCHOOLS</p> <p>In the course of reviewing the proposal, it is essential for the City to consider the provision of schools, particularly in Precincts 7, 8, and 15, considering the combined catchment that is generated from these precincts.</p> <p>Currently noted in the EWDSPP is the requirement for five primary schools and two high schools across the combined precincts, which taking into consideration current LSP proposals for precinct 15 and precinct 8, has been met. Precinct 15, with an estimated dwelling target of approximately 3,200, satisfies the relevant school provision requirements. However, Precinct 8, with an estimated dwelling target of approximately 2,500, appears to have a shortfall in primary school provision as per Department of Education's requirements.</p> <p>The precinct 8 LSP noted a reliance on a nearby existing primary school to cater for the primary school needs of the 2,500 dwellings in precinct 8, however detailed expected</p>		

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	<p>capacity/limitations have not been disclosed. It is important for the City, DPLH and Department of Education to analyse the capacity of this school over the next 5-10 years, to ensure that it can cater for the primary school needs from precinct 8.</p> <p>4. STAGING AND SERVICING</p> <p>The EWDSP outlines 3 stages of development (broad timing):</p> <ul style="list-style-type: none"> ▪ Stage 1 (2021-2031) – 10,000 dwellings, 700 jobs ▪ Stage 2 (2031-2051) - 20,000 dwellings, 14,000 jobs ▪ Stage 3 (2051+) - 20,000 dwellings, 5,300 jobs <p>It is anticipated that development will occur across the precincts in a west to east direction. The EWDSP staging is indicative only and premised on the cost effectiveness of an eastward extension of existing water, wastewater, and power services from existing suburbs along the western boundary of the EWDSP site.</p> <p>Outlined in the EWDSP, precinct 8 has been identified in 'Stage 1 (2021-2031)', and precinct 15 in 'Stage 2 (2031-2015)'. The EWDSP acknowledged the fragmented land ownership across the two precincts, underscoring the importance of land consolidation prior to development. The EWDSP notes that in areas in which there is most of the land owned by one proprietor, the proponent should demonstrate that adjacent precincts are not disadvantaged.</p> <p>Due to the common nature of issues and the interrelationships between the precincts, there is a requirement for ongoing collaboration amongst key development groups, as well as State Government agencies to deliver critical servicing infrastructure to unlock efficient development in these precincts, in an equitable manner.</p> <p>5. CONCLUSION</p> <p>In conclusion, Squarcini Group is supportive of the Precinct 8 LSP, with they key interests detailed in this submission for Council's consideration during its assessment of the LSP being:</p> <ul style="list-style-type: none"> • Consideration given to the interfacing and integration between Precinct 8 and Precinct 15 to ensure alignment of key objectives and outcomes, including transit corridors and provision of schools. • On going collaboration between key development groups across the precincts as well as State Government Agencies. • The Transit Corridor State Government-led initiative requires timely resolution ahead of finalisation of the draft LSPs. • Department of water and City to thoroughly review the transit corridor alignment in the proposal, considering its importance to the East Wanneroo Detailed Structure Plan, future public transport services, regional connectivity, and potential impacts on project delivery and housing supply. 		
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	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wanneroo. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wanneroo's first regional park by reallocating smaller park spaces, linking it to Lot 5's bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wanneroo Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region's development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wanneroo. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structureplan/ I have grown up in banksia grove and love the land we have. I went to Joseph banks secondary college and have noticed that the community especially within the younger population has not been a priority in this area. Instead of building useless structures nobody uses, it could be properly utilised to help create a sense of community within the people. Community centres or structures that can be used to bring people together and get the community talking and engaging with each other. The land is special. The people are special. I say we shouldn't be tearing down the land and spending peoples money on more things that doesn't help the community, we need to think of the people. What can we do to bring us all together again? Get the youths engaging with each other and the community? How can we make our home a better place for everyone?</p>	<p>Friends of East Wanneroo generic submission – please refer to response for Submission 8. The proposed primary school is intended to be co-located with playing fields as part of a neighbourhood community facility within the adjoining public open space (POS) to its north.</p>	<p>A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.</p>
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	<p><u>Object</u></p> <p>Issue One: Excessive Destruction of Endangered Bushland Problem: Destruction of high-quality, irreplaceable bushland crucial for endangered species like the Carnaby Cockatoo. We have lived across from Lot 5 for 15 years and have frequently visited Lot 5 to explore the wildlife and flora with our children. We have regularly observed kangaroos, bobtails, Carnaby Black Cockatoos, Tawny Frogmouths, Black Kites, other birds and lizards, many wild orchids and wildflowers. Kangaroos regularly visit the area, we have observed kangaroos in recent weeks. The 2024 Environmental Assessment Report states that Lot 5 is classed as vegetated Banksia Woodland (page 10), rated as “very good to excellent” (page 21). Excellent is defined as “Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species”. Impact: Loss of flora and fauna, negative effects on mental health, temperature regulation, water retention, soil health, and biodiversity. Solution: Amend the plan to retain 95% of lot 5 and lot 2 bushland, adding natural pathways to enhance resident interaction and maintain ecological benefits.</p> <p>Issue Two: Lack of Usable Parks and Green Spaces Problem: Insufficient quality parks and green spaces, particularly on the eastern side of Banksia Grove and across East Wannon. Impact: Reduced quality of life, lack of spaces for outdoor activities and events, inadequate regional parks. Solution: Create East Wannon’s first regional park by reallocating smaller park spaces, linking it to Lot 5’s bushland and a primary school playing field to benefit the whole community and attract events.</p> <p>Issue Three: Lack of Facilities and Appropriate Zoning Problem: Insufficient community facilities, lack of amenities and services, poor zoning favouring corporate interests over resident needs. Impact: Diminished physical and mental health, lack of youth engagement, spread of crime issues. Solution: Develop facilities similar to Wannon Aquamotion or Craigie Leisure Centre, add essential services and light commercial zoning to support local businesses, and provide a diverse range of block sizes.</p> <p>Final Comments The current structure plan is inadequate and neglects key areas essential for the region’s development and resident well-being. We request the council reject this proposal and consider a revised plan that incorporates the above solutions to better serve East Wannon. Please reference this page for further information, as I agree with its assessment. https://foew.com.au/precinct-8-structure-plan/</p>	Friends of East Wannon generic submission – please refer to response for Submission 8.	A recommended modification will require reconfiguration and/or amalgamation of POS sites 4, 7, 11, 16, 19, 20 and 21 to demonstrate that they can accommodate standard POS design requirements specified under LPP 4.3.
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	<p><u>Object</u></p>		

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	<p>My objections to Precinct 8's District Structure Plan relate to the East Wanneroo Sense of Place Statement produced by the City of Wanneroo in conjunction with a Community Reference Group. The concept of the DSoPS was "You know you're in East Wanneroo because ..." the history and heritage are evident, there is a wetland system with open space connections, mature trees and native vegetation, in other words innovative ideas making a difference.</p> <p>SENSE OF PLACE - CHARACTER AND TRANSITION BETWEEN RURAL AND URBAN</p> <p>1. The District Structure Plan of Precinct 8 is designed without consideration of a buffer zone enabling the harmonious transition between the Rural Residential RR04 Precinct 9 and urban development.</p> <p>The history of Precinct 9 - developed and sold in the 1970's as "LAKE ADAMS,,THE THOROUGHbred ESTATE" an equestrian complex - see attached photo Sunday Times 1979. The area was ex farming land and reasonably barren (attached photo from the south side of Lee-Steere Drive looking across Lake Adams to Neaves Road. Subsequent residents have greened this area by multiple plantings of trees and shrubs to what it is now.</p> <p>2. The Sense of Place and Character of the area which land owners have developed over the past 40 years is threatened together with the amenity and rural ambience of this unique area.</p> <p>4. The access to Bridal Trails, links to the bushland lake system and the equestrian complex in the south is denied by the inadequate Parkland links proposed in Precinct 8.</p> <p>5. The natural movement of flora and fauna is prevented by insufficient environmental access between Lake Adams Conservation Area and the Bush Forever/Parklands in the Precinct 8 District Structure Plan.</p> <p>6. A transition zone or buffer similar to that in Greenvale Place, between the two Precincts is a necessity.</p> <p>THE DSP OF PRECINCT 8: ENVIRONMENTAL RESPONSIBILITIES -</p> <p>SUSTAINABLE COMMUNITY - HISTORY</p> <p>1. Precinct 8 contains endangered species and a Pinjar complex, the only one in existence according to the City of Wanneroo, Local Environmental Survey, where is this area protected?. In addition the indicated Parkland on the corner of Coogee Road and Mornington Drive contains Banksia Attenuata an endangered species. This area is in need of care as a bush forever designation.</p> <p>2. The Parkland Link to the Bush forever site Mariginiup Lake is said to be for cyclists and walkers. Where is the flora and fauna and equestrian link ?</p>	<p><u>Sense of Place</u></p> <p>1. As a result of their different characteristics, it is acknowledged that careful consideration will have to be given to the interface between Precincts 8 and 9. The design of Coogee Road in particular will be of specific importance, therefore the City will need to collaborate with the developer at detailed design stage to ensure a suitable outcome to facilitate an appropriate interface between Precincts 8 and 9. These matters are dealt with at the design stage. The TIA is to be updated to reference the need to address the road interface of these two precincts sensitively. In addition, the recommended refined locational criteria for residential densities recommended by the City, proposed lots adjoining Coogee Road will not be able to develop at a higher density than the base code of R30. Refer to Submission 28 for further detail on the interface of Coogee Road.</p> <p>2. Regarding the concerns over Precinct 9, north of this LSP, the EWDSP states that the existing residential and equine uses will be maintained with no subdivision potential, leaving residents able to continue their current lifestyles, including equestrian activities. The EWDSP area has been planned for urban development for many years and is one of the key growth areas in the metropolitan area. It is acknowledged that this will also unavoidably change the local character of the area to some degree.</p> <p>4. Regarding the Parkland links, the Precinct 8 LSP accords with those set out in the DSP, but as this is a future residential development, equestrian use is not envisaged as an activity for this link. In this regard, the proponent</p>	<ul style="list-style-type: none"> That the requirement for the submission of a Vegetation Management Plan, Fauna Management Plan and Construction Environmental Management Plan at subdivision and development approval stages be included in Part 1 of the LSP. That lots abutting Coogee Road be prevented to be developed at a density higher than the base code of R30.

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	<p>3. Within a very short distance the Parkland Link crosses Pine Lane Access Road twice before reaching Coogee Road and Lake Adams Conservation area. A safety issue in itself?</p> <p>4. Where the boundary of Precinct 15 and Precinct 8 meet in the east is a road reserve, which logically could in a straight line link Lake Mariginiup and Lake Adams and provide an environmental bridge and bridal trail. If the road reserve is developed a link of appropriate size (i.e.minimum 50metres) could be encompassed alongside the road on the Precinct 8 location.</p> <p>5. Where is the concept of Sustainable Communities? Other than a Primary School there is no provision for</p> <ol style="list-style-type: none"> Social Housing or affordable housing Aged Care A Community Hub - <p>The house and gardens located at 26 Pinelake Trail were originally designed by Max Hewitt, a past President of The Landscape Industries Association of Western Australia. The house built in the early 1980's is unique in its design and worthy of preservation so to the equally beautifully designed gardens which include an artificial lake.</p> <p>In more recent times it was known as Onyesha Day Spa and since this Spa closed has been neglected.</p> <p>Historically this property should be restored and retained for the Community use and even encompass the concept of a community garden.</p> <ol style="list-style-type: none"> Sporting facilities A plan for public transport to avoid the mistakes of other developments, where by necessity homes have three or more cars parked on their front lawn. There needs to be encouragement and incentives for passive solar design, solar power, rainwater tanks and retention of mature tree canopy . A roundabout where the access road Pine Lake Trail and Lee- Steere Drive enter Coogee Road would make for easier and safer driving. <p>The challenge is to make a difference now.</p>	<p>noted that, <i>"given the links connect to the Lakes which are P&R (Bush Forever) reservation, we would suggest that this activity is not suitable in these areas."</i></p> <p>To facilitate improved cyclist and pedestrian movement around the whole of Lake Mariginiup, it is recommended that the LSP Map be updated to depict the Parkland Link extending to connect around the whole of this lake.</p> <p>5. It will be recommended that the requirement for the submission of a Vegetation and Fauna Management Plan, Fauna Management Plan at subdivision and development approval stages be included in Part 1 of the LSP.</p> <p>6. See point 1 above where the interface between Precincts 8 and 9 are also discussed.</p> <p><u>Sustainable Community – History</u></p> <ol style="list-style-type: none"> Regarding commentary on Lot 5 (11) Mornington Drive, please refer to 'Issue One' in Submission 8 (Friends of Esat Wanneroo Submission). The Parkland Link as shown in the Landscape Masterplan provides a blend of paths, activity nodes and natural vegetation, and can provide for pedestrian and cyclists. Once again, it is not envisaged that these will serve as equestrian use,(as outlined above). Parkland is connected by linear parks and landscaped boulevards shown depicted as parkland links on the structure plans. These parkland links will not only accommodate uninterrupted pedestrian cyclist movement, but also serve to maintain and enhance ecological linkages through the area. It will also be recommended that the requirement 	

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		<p>for the submission of a Vegetation and Fauna Management Plan, Fauna Management Plan at subdivision and development approval stages be included in Part 1 of the LSP.</p> <p>3. In terms of concerns over pedestrian crossings, these can easily be provided and limited to local roads which have low traffic volumes at detailed design stage, therefore a conflict between road users is not envisaged on these low order roads.</p> <p>4. It is not envisaged that any bridal trails from Precinct 9 will extend through into Precinct 8 and 15, with these to also be developed as urban areas, and the key foreshore areas are reserved in the MRS as 'Parks & Recreation' (Bush Forever) and should not be used for this purpose.</p> <p>5. In terms of the wider reaching 'sustainable communities' comments, the EWDSP, followed by subsequent LSPs, set out a spatial framework for different zones, reserves and roads.</p> <p>The provision of land uses such as Aged Care and Social Housing are not matters addressed through a structure plan and are dependent on private enterprise and market demand. Precinct 8 is expected to provide a Neighbourhood Playing Field and a Pavilion / Community Centre. In this regard, the proposed primary school is intended to be co-located with playing fields within the adjoining public open space (POS) to its north.</p> <p>The TIA lodged with the application notes that although dedicated bus transit routes will not be provided within the Precinct 8 area, key bus transit routes will be operating within the wider RWDSP area, notably east of the</p>	

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		<p>Lakes. The intersection where Lee-Steere Drive enter Pinelake Trail will be subject to detailed design at future planning stages.</p> <p>Residential parking is dealt with either at subdivision stage in the case of embayment parking for laneway lots, or at building or development application stage, the R-Codes for single, grouped or multiple dwellings</p> <p>Regarding the house and garden at No. 26 Pinelake Trail it is advised that the City's heritage advisor be approached as the LSP is not the appropriate mechanism to deal with this matter.</p>	
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	<p><u>Object</u> COMMENTS This Structure Plan is not fit for purpose and I ask Council to reject this proposal..</p> <p>1.) FCT 20a: Banksia attenuata woodlands over species rich dense scrublands'. The City of Wanneroo should be proud of having within its boundary some of a very rare vegetation community that is listed as 'Critically endangered'. This community is described as 'FCT 20a: Banksia attenuata woodlands over species rich dense scrublands'. As this community is now so rare, all that remains must be protected. 4ha is planned for removal under this Structure Plan. PGV states that the Structure Plan protects 56% of this community. (p36). All must be protected.</p> <p>2.) Banksia Woodlands of the Swan Coastal Plain Ecological Community This community must be protected as advised under the EPBC Act (s 266B) in the document 'Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain ecological community.' 10 ha of this community is proposed for clearing under the Structure Plan. The vegetation community is listed as endangered and there is a document of the conservation advice. This document states that the community must be 'PROTECTED...to prevent further loss of extent and condition'. Also the community must be RESTORED within its original range by active abatement of threats PGV states that 58% of the Banksia Woodlands TEC is to be protected in the Structure Plan. We can do much better than that.</p> <p>3.) Fragmentation The Local Structure Plan looks like a hotchpotch of unconnected patches. Why would each of the two areas in excellent condition be divided in half? (cnr Mornington Drive and Coogee Road and the other south of Ranch Road.) We know that larger areas (and linked areas)</p>	<p>Regarding the concerns raised by the submitter, the proponent provided the following response: <i>FCT20a</i> <i>FCT20a was identified as potentially being present in Precinct 8 at DSP level based on desktop assessment. The DSP indicated more detailed assessments should be done at LSP level which has occurred on most lots in Precinct 8. FCT 20a was only found to occur on half of Lot 2 Ranch Road. The other Banksia woodlands were assessed using computer analysis to be FCT 28 which is not a TEC.</i> <i>Banksia Woodland</i> <i>Clearing of Banksia Woodland TEC will be referred under the EPBC Act and assessed by DCCEEW.</i> <i>Fragmentation</i> <i>The Precinct 8 largely reflect the East Wanneroo DSP regarding the Lot 5 land parcel, which is subject to an EPBC approval.</i> <i>Black Cockatoo</i> <i>Clearing of Black Cockatoo habitat will be referred under the EPBC Act and assessed by DCCEEW.</i> <i>Bush Forever 147</i></p>	No modifications required.

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	<p>have a greater chance of its plants and animals persisting into the future. Areas of vegetation in excellent condition should be protected and linked to other natural areas.</p> <p>4.) Habitat for Black Cockatoo. Both Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos, listed respectively as endangered and vulnerable, forage in the banksia woodlands and red-tails in Jarrah and these species are protected under the EPBC Act. The Environmental Report says little about the two species...in fact doesn't name them I believe.</p> <p>5.) Bush Forever site 147 It would appear that some of Bush Forever site 147 is proposed for clearing. This is not acceptable as sites such as this have been selected because of their rarity, their representation of ecological communities, and for their general protection. BF site 147 is 'part of Greenways 16, 15: part of a regionally significant fragmented bushland/wetland linkage.' (p325 Bush forever Vol 2)</p> <p>6.) Likely to be exempt? I would not think that PGV's advice (p3) that 'any clearing at the subdivision stage is likely to be exempt from the requirements of a clearing permit' is correct.</p> <p>7.) Referral under the EPBC Act Referrals under the EPBC Act have been made on individual lot areas. Thus an area of only one lot would be a small area and therefore not deemed a controlled action (two cases – Lot 4 and Lot 3 noted by PGV)</p> <p>Conclusion: The City of Wanneroo has lost a significant amount of green canopy between 2011 and 2020. In those years it has lost from 15% tree cover to 8% tree cover. There are so many threats to our natural heritage that we must make every endeavour to protect the little that remains. Conditions have changed over years. Now we are seeing many trees dying from the effects of drought and climate change. I ask that the City, despite having worked on this Structure Plan for some time, withdraw it and start from the base of protection of areas in total and for the protection of species.</p>	<p><i>To confirm, no part of Bush Forever Site No. 147 is proposed to be developed.</i> <i>Subdivision (exemption)</i> <i>The PGV advice is correct.</i> <i>Subdivision approvals give a Schedule 6 exemption from a clearing permit where the clearing of native vegetation is necessary to fulfil a condition of subdivision.</i> <i>EPBA Act</i> <i>As outlined above, referrals to the DCCEEW will be undertaken in accordance with the Act.</i></p>	
150.	Agency (Water Corporation)		
	<p>Water The subject land is in the Wanneroo Gravity water zone, due to the height of Wanneroo Reservoir, the maximum ground level that can be served is 65mAHD. For areas above this ground level, the land will need to be cut to 65mAHD or extension of the Banksia Grove Booster Zone will be required. The logical point to extend from would be near the corner of Tumbleweed Dr and Abbey Green Rd. The size and location of the water reticulation mains will be prescribed in a Water Reticulation Plan that we will provide to the developer's consultant on request. As part of the Alkimos Seawater Desalination Plant, the Corporation will be constructing a DN1600 trunk main to connect the Plant to the Wanneroo Reservoir. The current planned route for this water main will be along Mariginiup Rd and therefore the eastern border of Precinct 8.</p> <p>Sewer The subject area is located within the Jandabup Sewer District. The land on the western side can be connected to the sewer network by extension of the gravity sewers as described in the</p>	Noted	No modifications required.

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	<p>Attachment 2 - Civil Servicing Report. Water Corporation strongly encourages initial stages of the development to start on the western side due to the simplicity and cost effectiveness of servicing the lots with sewer.</p> <p>Drainage</p> <p>The Department of Water and Environmental Regulation, and the Department of Planning, Lands and Heritage are responsible for determining a drainage solution for the East Wannon district. Water Corporation has not been asked to provide drainage services in the district and therefore has not undertaken any detailed drainage plans here. The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information Water Noted. Sewer Agreed, given the frontal nature of Precinct 8, it is logical that existing sewer capacity be set aside for this precinct and the western portion of Precinct 7 to the south. Drainage Noted is still valid.</p>		
151.	Agency (ATCO Gas)		
	<p>ATCO Gas Australia (ATCO) has no objection to the proposed application, based on the information and plan provided.</p> <p>Advice notes:</p> <ul style="list-style-type: none"> • Anyone proposing to carry out construction or excavation works must contact 'Before You Dig Australia' (byda.com.au) to determine the location of buried gas infrastructure. Refer to ATCO document AGA-O&M-PR24- Additional Information for Working Around Gas Infrastructure https://www.atco.com/en-au/forhome/natural-gas/wa-gas-network/working-around-gas.html • Proposed construction and excavation works need to be managed in accordance with the ATCO document Additional Information for Working Around Gas Infrastructure - AGA-O&M-PR24 https://www.atco.com/en-au/for-home/naturalgas/wa-gas-network/working-around-gas.html 	Noted	No modifications required.
152.	Agency – DBCA		
	<p>The Department of Biodiversity, Conservation and Attractions' (DBCA) Parks and Wildlife Service has reviewed the amendment report and relevant supporting documentation and provides the following advice pursuant to responsibilities under the Biodiversity Conservation Act 2016 (BC Act) and Conservation and Land Management Act 1984. DBCA provided advice to the Department of Planning Lands and Heritage, dated 24 April 2024, regarding the associated lifting of Urban Deferment request for Precinct 8. Advice provided below, regarding the current structure plan, reflects and is consistent with DBCA's previous comments.</p> <p>Planning Context - East Wannon District Structure Plan</p> <p>DBCA notes that the approved East Wannon District Structure Plan (EWDSP) proposes that a majority of Precinct 8 become a 'Suburban neighborhood' area with areas of 'Parklands (subject to confirmation)'. It is noted that the "Precinct 8 Concept Plan" (Rowe Group, 2024) provided with the supporting documentation, is not consistent with the EWDSP, removing or reducing a number of parklands areas within the precinct. It should be noted that outside the Parks and Recreation reserved lands, the current Concept Plan only allocates two small reserves to 'Parklands' with the remaining open</p>	<p>Planning Context</p> <p>The proponent provided the following response:</p> <p><i>It needs to be noted that the DSP provided an initial framework, including for 'Parkland' allocation but that this was subject to further investigation, to be done at local structure planning.</i></p> <p><i>Such investigations have now been completed, conclusion that the Parkland areas can be refined to better target the best quality vegetation.</i></p> <p><i>It is also critical to note that many of the POS areas also contain remnant vegetation and indeed were designed and configured to target this retention. The sole reason these areas are designated a 'public open space' is due to these areas also serving other functions, and to keep</i></p>	<p>Recommended modification:</p> <ul style="list-style-type: none"> • That the significant breeding trees identified in the EAR are reflected within the LSP Map and retained in either POS or road reserves. • That the requirement for

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	<p>space areas designated as 'public open space'. DBCA understands that key strategic planning decisions and documentation, including the Developer Contribution Plan, are required to be finalised by relevant agencies to enable progression of detailed planning stages within the EWDSP area.</p> <p>Threatened ecological communities and flora The information provided in the referral documentation is considered inadequate to assess the flora and vegetation values within the amendment area that will be impacted through future development. The 'East Wanneroo Precinct 8 Environmental Assessment Report' (EAR) (PGV, 2024) was prepared to support the lifting of Urban Deferment and structure plan referrals and provides a summary of previous environmental assessments undertaken over portions of the precinct since 2010. A majority of these previous assessments consisted of preliminary or reconnaissance surveys (Section 3.6, p 14). Lot 5 Mornington Drive, Mariginiup, which is located to the north of Precinct 8, contains a known occurrence of the threatened ecological community (TEC) SCP20a 'Banksia attenuata woodland over species rich dense shrublands (Critically Endangered) which is protected under the Biodiversity Conservation Act 2016 . It is highly likely that areas of banksia woodland in Good or better condition within Precinct 8 may also align with this TEC. The EAR indicated that a number of lots within the precinct were representative of SCP20a (Section 3.8.4, p 22). Due to the lack of provision of the previous flora surveys and the floristic community type analysis DBCA is unable to confirm the TEC occurrences or their extent. Similarly, in the absence of provision of the survey reports, DBCA cannot comment on the adequacy of the targeted threatened flora surveys undertaken. Confirmation of mapped TEC occurrences and identification of threatened flora populations should occur prior to the lifting of Urban Deferment and consideration of the precinct structure plan, to ensure significant values are recognised, retained and protected. This may include a requirement to undertake additional detailed environmental assessment, in accordance with the EPA's Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (2016) and DBCA guidance to inform both the lifting of Urban Deferment and structure plan. Proponents for development proposals that are likely to take or disturb State-listed threatened species will be required to submit an application for ministerial authorisation under Section 40 or to modify an occurrence of a threatened ecological community under section 45 of the BC Act. The current concept plan proposes modification of a portion of the known occurrence of TEC SCP20a within Lot 5 Mornington Drive. Threatened Fauna The remnant vegetation throughout the Precinct 8 and broader EWDSP area provides known and potential habitat for conservation significant fauna species including</p>	<p><i>the overall reservation terminology consistent and straightforward.</i> <i>Another pertinent comment is that the Precinct 8 LSP sets aside 17.4ha of retained native vegetation.</i></p> <p>TEC/flora <i>All lots which could potentially contain community type SCP20a have been surveyed with the exception of Lot 6 Coogee Road which retained 100% of the proposed Parkland area, as per the DSP.</i></p> <p>Threatened Fauna <i>As correctly pointed out, the Precinct 8 LSP retains a significant amount of habitat, however we are unclear on the supposed lack of planning mechanism given these areas of vegetation are shown on the LSP map as falling within area of Parkland / POS or P&R reserve in the MRS.</i> <i>The proponents accept that portions of Precinct 8 will require an EPBC referral, prior to clearing.</i></p> <p>Bushfire <i>The vast majority of Bush Forever site 147 is shown as 'Class D Scrub', with only a limited portion shown as 'Class G Grassland', with this portion likely to remain as such.</i></p> <p>Bush Forever <i>It needs to be recognised that the vast majority of the Bush Forever edge is provided with a hard (road) edge, as requested by DBCA, with the exception of only a short length of future urban land, inclusive of a WWPS, with this urban cell having a minimum depth of 40m. This means that a hard edge can be provided through development, which is typically required for any open space interface, be it hardscaping, fencing or other development outcomes.</i></p> <p>MNES</p>	<p>the submission of a Vegetation Management Plan, Fauna Management Plan and Construction Environmental Management Plan at subdivision and development approval stages be included in Part 1 of the LSP.</p>

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	<p>Carnaby's black cockatoo (<i>Zanda latirostris</i>) (EN), forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>), Baudin's Cockatoo (<i>Zanda baudinii</i>) (EN) (VU), Western Brush Wallaby (<i>Notomacropus irma</i>) (P4), and quenda (<i>Isodon fusciventer</i>) (P4). The EAR indicates that Precinct provides 58.3 hectares of black cockatoo foraging habitat (p 29 and Figure 8). While the planning report indicates that 13.8 hectares of this habitat will be retained within the structure plan area, the planning mechanisms to ensure this occurs are not included in the documentation. In the absence of clear vegetation retention commitments, impacts to threatened fauna species cannot be recognised. The cumulative impacts associated with the loss of threatened black cockatoo habitat is reducing the amount of habitat and reducing the number of birds that can be supported in the region. In the respective black cockatoo recovery plans they note that reversal of threats (including loss of habitat) is required before significant increases in the cockatoo populations can occur. The Recovery Plan's identify the need to protect and manage as much habitat as possible to minimise the impacts of habitat loss. Therefore, all remaining resources are significantly important to black cockatoos.</p> <p>Bushfire Management Plan The supporting documentation includes the 'Bushfire Management Plan – Precinct 8, East Wannon' (BPAD, 2024) which includes a bushfire hazard assessment of the vegetation on site pre-and post- development. It is noted in Figure 12 (page 16) of the BMP that post-development vegetation classification shows many areas, that are currently within Bush Forever Site 147 and are reserved for Parks and Recreation, are classified as "Class G Grassland" or "Non-vegetated". There is no consideration therefore that these areas may be subject of revegetation or rehabilitation works and will therefore need to be maintained as either non-vegetated or grassland into the future. In addition, it is noted that the 'Wetland Buffer Assessment and Foreshore Strategy' (PGV, 2024) states that "Any proposed rehabilitation should not increase the bushfire hazard levels for existing and future residents of the area" (page 21). There are future opportunities for restoration of the wetlands, buffers and foreshores and creation of threatened fauna habitat within Bush Forever 147 that should be considered and included in the bushfire hazard assessment, to ensure the ability to undertake these works in the future. Therefore, all areas within Bush Forever site 147, outside of the core wetlands should be classified, as "Class D Scrub" to allow for future revegetation.</p> <p>Bush Forever Site 147 The proposed structure plan area includes a 90 hectare portion of Bush Forever Site 147 (Mariginiup Lake and adjacent Bushland, Mariginiup), which contains significant biodiversity values including high value wetlands and regionally significant vegetation and is currently managed for conservation by the Western Australian Planning Commission (WAPC). Appropriate interface treatments, including the provision for a hard road edge, should be applied at the detailed planning stages to assist in protecting the</p>	<p><i>Noted. The proponent understands its responsibility under this federal legislation which is a separate yet approval approval process.</i></p> <p>Administration recognises the environmental challenges in retaining vegetation as a result of land transitioning from rural uses to urban uses. It is suggested that a modification to the LSP Map be made to show significant breeding trees identified.</p>	

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	<p>values within the BF area.</p> <p>The development should be designed to adequately protect, manage and avoid hydrological impacts to the wetlands adjacent the precinct, including the provision and management of adequate wetland buffers. As the precinct and structure plan area includes a portion of Bush Forever site 147, consideration should be given to the management and improvement of the Bush Forever area, including the wetland buffer, as part of the future urban development. This includes the preparation and implementation of relevant environmental management plans to ensure ongoing protection and enhancement of wetland and vegetation values and mitigation of impacts from changes in adjacent land uses.</p> <p>It is noted that the “Wetland Buffer Assessment and Foreshore Strategy” (PGV, 2024) has been prepared to guide the ‘provision of amenity within foreshore reserve areas’ (page 21) and determine appropriate wetland buffers to Lake Mariginiup and Little Lake Mariginiup, both located with Bush Forever site 147. Any future recreational facilities and uses, or ecological restoration and management within the WAPC owned Bush Forever site, should be proposed in consultation with the current and future long-term land managers. This management should also be in accordance with the future purpose and conservation value of the areas. The proponents for future development stages adjacent the Bush Forever site should consider resourcing the provision of any facilities which service public amenity, including the management of those threatening process which have arisen from the change in land use. This could be facilitated by the above requirement to prepare and implement environmental management plans for the Bush Forever areas.</p> <p>Matters of National Environmental Significance</p> <p>The native vegetation proposed to be cleared to facilitate the future development of the precinct is likely to impact Matters of National Environmental Significance such as the ‘Banksia woodlands of the Swan Coastal Plain’ TEC and the breeding, roosting and foraging habitat of threatened species listed under State and Commonwealth legislation including Carnaby’s black cockatoo (<i>Zanda latirostris</i>), Baudin’s Cockatoo (<i>Zanda baudinii</i>) and forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>). Consideration should therefore be given to the obligations for assessment of future proposals in accordance with the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Please be aware that proponent may have notification responsibilities under the EPBC Act and should contact the Commonwealth Department Climate Change, Energy, the Environment and Water for further information on these responsibilities, prior to further planning stages</p>		
153.	Agency (DOT)		
	<p>The Urban Mobility (UM) division of DoT has reviewed the submitted document and provides the following advice:</p> <ul style="list-style-type: none"> • The Structure Plan area and surrounds contain primary, secondary, and local routes in DoT’s Long Term Cycling Network (LTCN). As this is not currently an 	<p>Noted.</p> <p>The applicant has stated that: “... <i>a potential Local Centre was mooted for the LSP area, with one of</i></p>	<p>Recommendations:</p> <ul style="list-style-type: none"> • That the LSP Map as well as

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	<p>urban area the structure planning process provides an excellent opportunity to provide cycling connections within the precinct and to the longer-term cycling network. The submitted document provides little indication of LTCN integration such as Coogee Road to Tumbleweed Drive; Mornington Drive; Ranch Road (to Pinjar Road); nor does it show integration of non-LTCN pedestrian networks connecting to Sundowner Meander which is a logical pedestrian desire line to Banksia Grove Shopping Centre.</p> <ul style="list-style-type: none"> • The submitted TIA need to be updated as per the WAPC's TIA guidelines, with the inclusion of more detailed pedestrian and cycle networks and safe walk to school assessments for schools within the subject area. The absence of a cycle and pedestrian infrastructure map within the Structure Plan documentation makes it difficult (or open to interpretation) as to just what cycle and pedestrian infrastructure will be provided. • It is noted that the Neighbourhood Connector B network has been oriented to minimize vehicle traffic along Nambi Parkway. This results in a predominantly north/south network; however the main pedestrian/cyclist travel demand is likely to be towards the Banksia Grove Shopping Centre to the north-west of the structure plan area. It is noted that Item 10.1.3 of the TIA suggests good levels of integration via strong north-south and east-west links, however these are not well demonstrated. • As foreshadowed in the East Wannon District Structure Plan, PTA (through METRONET) has undertaken further work to identify and refine the transit corridor needs and alignment through the East Wannon District Structure Plan (EWDSP) area, including Precinct 8. DoT advises that the City and applicant should liaise directly with Department Planning Land and Heritage to obtain advice on how structure planning should proceed while required updates to the EWDSP are being prepared. It is important for the structure plan to comprehensively explore opportunities to maximise connections to the EWDSP transit corridor. • Section 7.4.1 and 7.4.2 of the TIA note some level of amenities located within 5 to 10 minutes walk, other than Banksia Grove Shopping Centre which is a 30 minute walk, however no clear mapping is provided to show the location of these facilities. The comment in Section 7.4.3 that "overall it is considered that the LSP is located within an accessible location... some services within 10 minute walk... public transport services in Pinjar Road... wider variety at..Banksia Grove" does not give confidence that the Structure Plan area will enable a community with "reduced demand for private vehicle usage and increasing patronage to local amenities" as per Section 10. • Table 1.2 and Figure 2.9 of the East Wannon District Structure Plan suggests that a Local Centre is identified within this precinct to serve a 400m catchment. The walkability, and the use of walking as a transport mode, would be significantly enhanced if the Precinct 8 Local Structure Plan area contained a 	<p><i>the land owners actively pursuing such an opportunity; however, subsequent analysis found that this local centre would struggle to be commercially viable its close proximity to the Banksia Grove District Centre. This is best demonstrated by the local centre at the corner of Tumbleweed and Viridia Drives struggling commercially."</i></p>	<p>Part 1 and Part 2 of the LSP be modified by including a Local Centre site within the Precinct 8 structure plan area in accordance with the relevant provisions and requirements stipulated in State Planning Policy 4.2 - Activity Centres.</p> <ul style="list-style-type: none"> • That the ultimate locations and boundary configurations with final road designs for the local centre site be determined by the WAPC pending the outcome of an updated Transport Impact Assessment and consideration of relevant matters raised by affected landowners during future consultation.

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	<p>neighbourhood/local centre so that the 2,500 lots and approximately 7,000 residents enjoyed the benefits (amenity, property value and health) of such a centre within a genuinely walkable catchment. DoT notes that SPP 4.2 Activity Centres suggests that Neighbourhood Centres are appropriate for populations of between 2 and 7 thousand, so there appears to be capacity for the Local Centres to provide a reasonable level of activity such as small supermarkets and cafes etc.</p> <p>• The documentation notes that the local road network will be safe for pedestrians and cyclists if speeds can be limited to 30kmh, however there does not appear to be a commitment to such speeds. It is important that a suggestion of low speed limits not be used to minimise requirements to provide cycle and pedestrian infrastructure.</p> <p>DoT understands that Main Roads WA and Public Transport Authority will send responses directly</p>								
154.	<p>Agency (DFES)</p> <p>This advice relates only to State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the Responsibility of the proponent to ensure the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.</p> <p>Assessment</p> <p>1. Policy Measure 6.3 a) (ii) Preparation of a BAL contour map</p> <table><tr><th>Issue</th><th>Assessment</th><th>Action</th></tr><tr><td>Vegetation Classification</td><td><p>The methodology used for the vegetation classification does not align with the methodology as set out in the Guidelines. The patches of vegetation are not labelled on the Vegetation Classification Maps. There are photo ID's for five patches of vegetation, and there is a list of vegetation patches in Table 1 that do not align with the photographic ID's or the vegetation classification map.</p><p>For example – Patch 1 in the photographic evidence is Class A Forest, but Patch 1 in Table 1 is Class D Scrub. Each vegetation patch should be individually labelled and be consistent throughout the BMP. All patches should have sufficient photographic evidence to demonstrate the classification. Height sticks should be used where appropriate.</p></td><td><p>Modification to the BMP is required.</p></td></tr></table>	Issue	Assessment	Action	Vegetation Classification	<p>The methodology used for the vegetation classification does not align with the methodology as set out in the Guidelines. The patches of vegetation are not labelled on the Vegetation Classification Maps. There are photo ID's for five patches of vegetation, and there is a list of vegetation patches in Table 1 that do not align with the photographic ID's or the vegetation classification map.</p> <p>For example – Patch 1 in the photographic evidence is Class A Forest, but Patch 1 in Table 1 is Class D Scrub. Each vegetation patch should be individually labelled and be consistent throughout the BMP. All patches should have sufficient photographic evidence to demonstrate the classification. Height sticks should be used where appropriate.</p>	<p>Modification to the BMP is required.</p>	<p>It is suggested that the applicant modify the BMP as required by DFES</p>	<p>Recommended modification:</p> <ul style="list-style-type: none">• The BMP being modified to address matters raised by DFES;• The BMP be updated to adequately consider the retention of vegetation within POS to ensure adequate tree canopy can be retained; and• The requirement for a BMP to be provided with any subdivision application lodged for assessment. .
Issue	Assessment	Action							
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		Photo ID's 3 and 4 are representing Scrub but no height sticks are included.			
	CCW Buffer	<p>There are areas within the CCW buffer identified as Class G Grassland. CCW buffer areas are generally subject to revegetation and unlikely to remain as Grassland. In addition, no photographic evidence of this area has been provided to substantiate the classification. A number of BMP's have been submitted as part of the East Wanneroo District Structure Plan and the CCW has been classified as either Class A Forest or Class D Scrub. SPP 2.9 states that <i>'no bushfire mitigation strategies are to be contained within a waterway foreshore area or wetland buffer.'</i></p>	Modification to the BMP is required.		

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	<table><tr><th>Element</th><th>Assessment</th><th>Action</th></tr><tr><td>Location, and Siting & Design</td><td><p>A1.1 & A2.1 – not demonstrated</p><p>The post development BHL is unable to be validated due to the reasons listed in the table above including the clarification required regarding the management of the CCW buffer area.</p><p>There are also urban areas identified on the BAL Contour Map as BAL-40/FZ adjacent to the future Mariginiup Road Extension. The timeline for the extension of this road is unknown. It is acknowledged that the BMP states these lots will not be developed until the road is in place. These lots should be held as balance lots in a future subdivision application, which should be acknowledged in the Structure Plan report.</p><p>Strategic planning presents the best opportunity to incorporate setbacks in the form of roads and/or managed open space areas to address at planning stage. A BAL Contour Map should be provided to demonstrate compliance with Elements 1 and 2 by locating development in areas with least possible risk of bushfire and achieving a maximum rating of BAL-29 for all future residential areas and not rely on construction standards, in-lot setbacks or the possible management of the wetland buffer.</p></td><td>Modification to the BMP required.</td></tr><tr><td>Vehicular Access</td><td><p>A3.3 – not demonstrated</p><p>The BMP states that temporary dead-ends may be in place until the future Mariginiup Road is constructed. No-through roads are to be avoided. At this level of planning there should be no temporary no-through roads. Secondary access should be achieved at all stages.</p></td><td>Modification to the BMP is required.</td></tr></table>	Element	Assessment	Action	Location, and Siting & Design	<p>A1.1 & A2.1 – not demonstrated</p> <p>The post development BHL is unable to be validated due to the reasons listed in the table above including the clarification required regarding the management of the CCW buffer area.</p> <p>There are also urban areas identified on the BAL Contour Map as BAL-40/FZ adjacent to the future Mariginiup Road Extension. The timeline for the extension of this road is unknown. It is acknowledged that the BMP states these lots will not be developed until the road is in place. These lots should be held as balance lots in a future subdivision application, which should be acknowledged in the Structure Plan report.</p> <p>Strategic planning presents the best opportunity to incorporate setbacks in the form of roads and/or managed open space areas to address at planning stage. A BAL Contour Map should be provided to demonstrate compliance with Elements 1 and 2 by locating development in areas with least possible risk of bushfire and achieving a maximum rating of BAL-29 for all future residential areas and not rely on construction standards, in-lot setbacks or the possible management of the wetland buffer.</p>	Modification to the BMP required.	Vehicular Access	<p>A3.3 – not demonstrated</p> <p>The BMP states that temporary dead-ends may be in place until the future Mariginiup Road is constructed. No-through roads are to be avoided. At this level of planning there should be no temporary no-through roads. Secondary access should be achieved at all stages.</p>	Modification to the BMP is required.		
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<p>Recommendation – compliance with acceptable solutions not demonstrated – modifications required</p> <p>The BMP does not adequately address the policy requirements of SPP 3.7 and the Guidelines. DFES has assessed the Structure Plan and accompanying BMP. Several issues that need to be addressed prior to support of the proposal (refer to the tables above).</p> <p>In addition to the BMP updates, DFES recommends amendments to the proposed Structure Plan (section 4.13 of the East Wanneroo Precinct 8 Ranch Road Local Structure Plan Report), consistent with any future modifications to the BMP. The proposed changes include commitments regarding the location of residential lots in areas of BAL-29 or below; and</p>												

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	vehicular access and vegetation management to meet the requirements of SPP 3.7 and Guidelines at all stages of the development.		
155.	Agency (DOE)		
	<p>Agency (DOE)</p> <p>Adequacy and size of public school site</p> <p>The Department notes the increased anticipated dwelling yield of 2,500 in lieu of the 2,300 dwellings as envisioned in the EWDSP. Whilst the allocation of one public primary school site appears to be consistent with the EWDSP, the additional 200 dwellings may have implication on the public school planning of the broader locality. Furthermore, the proposed yield already presents a departure from the prescribed threshold of 1 public primary school site for every 1,500 dwellings under the OP 2.4.</p> <p>Notwithstanding this, should there be any further increase in the number of dwellings or changes to the density coding or zoning which would result in an increase to the student enrolment demand, the Department reserves the right to review the public school planning at the preparation of any future Structure Plan amendments and/or subdivision and that additional public school site/s may be requested.</p> <p>In terms of the size of the primary school site, the proposed 3.5 hectares (ha) with co-located Public Open Space (POS) identified as 'POS 9' contravenes with the land size requirement of OP 2.4. To align with OP 2.4, the Department will generally request for additional land of up to 2,500m² for childcare services on every new public primary school site identified on new structure plans. Exemptions for childcare services on public school sites could be considered where there is a planned or established childcare services within the vicinity of public school sites. However in this instance, given there is no nearby land use designated for childcare services, primary school site is required to be a minimum of 3.75 ha.</p> <p>Public Open Space</p> <p>Based on the Precinct 8 Concept Plan on Appendix 1, the indicative overlay of the oval in 'POS 9' shows that it sits within the effective primary school site. Clarification is sought on the extent of the oval encroachment into the school site. It should be highlighted that the maximum area of encroachment of oval including over-runs into the school site is 0.5 ha. 2</p> <p>Attachment 7 – Landscape Strategy indicates that the POS '9' adjacent to the school site will be a 'Neighbourhood Park' and the associated concept plan identifies a drainage basin on the south-western portion of the POS.</p> <p>Clarification is sought on whether the 'POS 9' is expected to contain stormwater runoff from adjoining properties and serve as a drainage function. It is important to note that the Department only support co-location of active POS without any bioretention or drainage basins in the interest of safety of students and operational requirements of schools. In this instance, the presence of a drainage basin and being in close proximity to the school site and oval remains a significant concern for the Department.</p> <p>In addition, it is also the Department's expectation that the adjacent active POS achieves a lower level than the school site to facilitate access, passive surveillance and on-site drainage.</p>	<p>In terms of the size of the primary school site, the proposed 3.5 hectares with co-located Public Open Space (POS) identified as 'POS 9' contravenes with the land size requirement of OP 2.4. To align with OP 2.4, an additional 2,500m² for childcare services is required on every new public primary school site identified on new structure plans. Exemptions for childcare services on public school sites could be considered where there is a planned or established childcare services within the vicinity of public school sites. In this instance, however, given there is no nearby land use designated for childcare services, the primary school site is required to be a minimum of 3.75 ha.</p> <p>The school site will be bounded by three road frontages primarily with two Neighbourhood Connectors and an Access road. Whilst the Neighbourhood Connectors would allow for on-street embayment bays and dual use path within the road reserve adjacent to the school sites, the Access Road reserve width on the diagonal western road adjacent to the school site is deemed to be insufficient.</p>	<p>Recommended modifications:</p> <ul style="list-style-type: none"> That the primary school site be increased to 3.75 hectares to facilitate the provision of childcare services in accordance with the provisions of OP 2.4. That the TIA be updated with the Access road abutting the primary school site being categorised as Access road B to facilitate embayment parking. That the area of the Unrestricted POS (POS 9) that adjoins the primary school be increased to a minimum 5 ha in size and be reconfigured to a rectangular shape to sufficiently cater for future

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	<p>Significant vegetation and flooding risk It is noted that the school site spans, in part, across Lot 250 and Lot 251 Ranch Road. Table 5, Figures 5 and 8 of Attachment 1 – Environmental Assessment Report indicate the presence of Banksia Woodlands and/or Black Cockatoo Habitat on the portions of the subject lots. In particular, there is a significant vegetation directly to the east of the school site on Lot 251 and therefore clarification is sought on whether the school site is free from any significant vegetation. In addition, should the subject vegetation be required to be retained, there is a possible risk of bushfire on the adjoining school site.</p> <p>One of the key attributes of a school site is that it does not contain significant ecological community that require retention. In addition, there should be no issues that would arise as a result of any proposed clearing of vegetation that are likely to require offsets, or conditions to manage or mitigate effects on the environment as these would adversely impact, amongst other things, the school site planning, delivery timing and future operation of the schools.</p> <p>Appendix 2 – Wetland Boundary on Concept Plan of Attachment 8 – Wetland Buffer and Foreshore Strategy indicates the areas subject to wetland buffers and it appears that the proposed school site is not exposed to any wetland buffer. Notwithstanding this, to provide some level of certainty, it would be beneficial to include a commentary in the Structure Plan Report that the school site will not be impacted by potential flooding risk.</p> <p>Movement network In relation to the road hierarchy, the Department notes that the school site will be bounded by three road frontages primarily with two Neighbourhood Connectors (20 – 22 metres wide) and Access road (15m wide).</p> <p>Whilst the Neighbourhood Connectors would allow for on-street embayment bays and dual use path within the road reserve adjacent to the school sites, the Access Road reserve width on the diagonal western road adjacent to the school site is deemed to be insufficient. Accordingly, the Department requests that the subject road be upgraded to Access Street B of at least 17.9m wide as per Liveable Neighbourhoods.</p> <p>Staging Plan Figure 17 – Staging Plan of Part 2 of the Structure Plan Planning Report indicates that the future preparation/development of the school site and adjoining POS will be undertaken by two different developers (i.e Urban Capital and Cube). In order to facilitate the future delivery of the school site and the adjoining POS, the Department's preference is for one single developer to manage the school site and associated POS.</p> <p>Recommendation In view of the above, the Department has no objections to the proposed Structure Plan subject to the above matters being satisfactorily addressed. The Department welcomes the opportunity to liaise with the City of Wanneroo, Department of Planning, Lands and Heritage and/or developer to ensure compliance with the provisions of the OP 2.4.</p>		community needs within Precinct 8.
156.	Agency – Western Power		

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	<p>Unfortunately requests for general comments, feedback and approval for proposals can't be provided for without a formal application and the investigation by Western Power that follows. We suggest reviewing your query against the processes referred to in our Strategic Planning web page:</p> <ul style="list-style-type: none"> • Using our provided mapping tools and Before You Dig Australia to locate any assets that may be affected by any proposed change or development • Consider the proposal against our Products and Services • If there are transmission assets (66,000VOLTS-330,000 VOLTS) in proximity to your work, applying via our move or remove transmission and communication assets form, • Ensuring any developers involved are aware that they will need to make an application to deal with any assets that are in the development area as well as for the power requirements for the development. 	Noted	No modifications required.
157.	Agency: Department of Water and Environmental Regulation (DWER)		
	<p><u>City Ref. 154 – Agency: Department of Water and Environmental Regulation (DWER)</u></p> <p>Local Water Management Strategy (Pentium Water, April 2024)</p> <p>At this time, the Department does not support the progression of the proposed Precinct 8 Local Structure Plan (LSP) because several district-planning-scale matters relating to groundwater management, wetland and foreshore management, and staging of the East Wanneroo development, have not been resolved. Therefore the <i>Local Water Management Strategy</i> (Pentium Water, April 2024) cannot be relied on.</p> <p>The Department is aware that progress has been made by the Department of Planning, Lands and Heritage (DPLH) to address these groundwater management matters, but the Department has not been provided with documentation to conclude that these have been resolved. The Department has undertaken a preliminary review of the <i>Local Water Management Strategy</i> (Pentium Water, April 2024) and has found it does not meet the requirements of the <i>East Wanneroo District Structure Plan</i> (WAPC, August 2021), <i>East Wanneroo District Water Management Strategy</i> (DPLH, March 2021), <i>Draft State Planning Policy 2.9: Planning for Water Guideline</i> (WAPC, 2021) and the Department's policies. The information provided does not demonstrate proof of concept for stormwater and groundwater management. For example, implementation of the proposed LSP and LWMS would require the removal of multiple pockets of remnant vegetation identified as a high priority for protection in the East Wanneroo DSP and District Water Management Strategy (DWMS) and identified in the <i>East Wanneroo Precinct 8 Environmental Assessment Report</i> (PGV Environmental, Feb 2024) as a threatened ecological community and/or Black Cockatoo habitat that will likely require assessment under the federal <i>Environment Protection and Biodiversity Conservation Act 1999</i>. OFFICIAL</p> <p>There appear to be discrepancies between the figures, attachments and observed groundwater levels (e.g. trapped catchment basin B17). There is no evidence that <i>East Wanneroo Precinct 8 Wetland Buffer Assessment and Foreshore Strategy</i> (PGV Environmental, March 2024) has consulted with the Department of Biodiversity, Conservation</p>	<p><i>The applicant has provide the following response: DWER</i></p> <p><i>The proponent acknowledged that not all facets of the district scale stormwater and groundwater management elements have been resolved and that additional information and designs are being concurrently developed by DPLH to support the Groundwater Management Scheme for the East Wanneroo DCP. Still, it must also be stressed that Precinct 8 is within the Stage 1 (2021-2031 development timeframe) of the East Wanneroo DSP and is therefore largely unencumbered by these issues. It is also important to note that Stage 8 does not require a pumped groundwater management scheme to be implemented to support development across its land holding, unlike other neighbouring precincts.</i></p> <p><i>The requirement for water levels within Lake Mariginiup to be possible need controlling or management in the future is noted but this potential need (and its associated infrastructure) is an item in the Esat Wanneroo Development Contribution Plan and therefore is funded by all developers and implemented by what we are assuming to be either the City or the DPLH. Given the above and the fact that this responsibility lies with government agencies, we would suggest a sensible consideration of the LWMS (and of the</i></p>	<p>It is recommended that the significant breeding trees identified in the EAR are reflected within the LSP Map.</p>

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	<p>and Attractions (DBCA). No information is provided in the LWMS, <i>Landscape and Open Space Master Plan</i> (Considered Space, 2024) or <i>East Wanneroo Precinct 8 Wetland Buffer Assessment and Foreshore Strategy</i> (PGV Environmental, March 2024) to demonstrate how flows from minor and major events will be connected to Lake Mariginiup and Little Mariginiup Lake, consistent with the objectives of the conservation category wetland buffer.</p> <p>East Wanneroo Groundwater Flow Model Development, Calibration and Future Scenario Simulations report</p> <p>DPLH's consultant, Pentium Water, has developed a groundwater model and provided the Department with a draft of its report <i>East Wanneroo Groundwater Flow Model Development, Calibration and Future Scenario Simulations report</i> (Pentium Water, September 2023) for our review. While the modelling report demonstrates progress towards meeting the requirements of the DWMS, further documentation is required. The Department may consider development within "Stage 1" in Figure 1.16 of the EWDSP (August 2021) provided that appropriate land is being set aside for flood management and the future connection to a district scale groundwater management scheme. The modelling report identifies that Mariginiup Lake will require ongoing monitoring and adaptive water level management including a scheme to remove excess water.</p> <p>Precinct 8 incorporates a portion of the catchment area of Mariginiup Lake, however, it is proposed to use most of the available storage within the lake to manage subsoil drainage and stormwater. There is no information in the report on staging or interim drainage measures. If development in this precinct is allowed to commence before a district scale groundwater management system has been designed and/or implementation has commenced the current proposal may have a significant environmental impact on Mariginiup Lake and potentially limit drainage from other portions of the lake catchment.</p> <p>East Wanneroo District Structure Plan</p> <p>The <i>East Wanneroo District Structure Plan</i> (WAPC, August 2021) details the planning requirements and technical matters for the area that must be undertaken prior to any proposed rezoning to urban or any proposed local structure plans. While the Department is working closely with DPLH and its consultants on several of these matters, these requirements have not yet been met. The relevant parts of the District Structure Plan are: 2.2.2 <i>District Development Contribution Plan, Wetland and Foreshore Management Plan</i> and 6.5.1 <i>Groundwater Management</i>.</p> <p>East Wanneroo District Water Management Strategy</p> <p>The <i>East Wanneroo District Water Management Strategy</i> (DPLH, March 2021) was endorsed by the Department in April 2021. This endorsement was conditional on a district groundwater management model and implementation strategy being developed by the Western Australian Planning Commission/City of Wanneroo prior to local structure planning (Table 33, <i>East Wanneroo DWMS</i>, March 2021). The Department also advised that if local structure planning proceeds before the development of the district groundwater management scheme, the</p>	<p><i>Precinct 8 LSP in general) to allow development to progress in this precinct due to its adequate clearance to groundwater and the fact that it is not contingent on any district scale groundwater or lake water management scheme, again differentiating Precinct 8 from other precincts.</i></p> <p><i>With regards to the commentary on the possible 'removal of multiple pockets of remnant vegetation', this is a matter for the EP Act and EPBC Act referrals; however, it is our opinion that the LWMS provides ample proof that both stormwater and groundwater management is based on the urban design presented in the Precinct 8 LSP (and its associated LWMS), which clearly identifies any remnant vegetation that is to be retained In area of open space.</i></p> <p><i>EPA Services</i></p> <p><i>Environmental values</i></p> <p><i>The EAR is clear in stating that 58% of the Banksia Woodland is to be retained and therefore 42% (16.5ha) will be cleared. The EAR also states that 56% of FCT20a is retained so 44% will be cleared (3.7ha). 33% of the habitat for Black Cockatoos will be retained with 67% cleared (39ha). The areas to be retained are shown on Workplan 1</i></p> <p><i>Hydrology</i></p> <p><i>In regard to comments on changes to hydrology these are addressed in the LWMS as summarised in the EAR. The areas of retained vegetation are already in a fragmented landscape and are impacted by edge effects. The Structure Plan provides hard edges as roads around all areas of native vegetation. It is expected that further mitigation specific to each area would be managed in detail at subdivision.</i></p> <p><i>EPA Policies</i></p> <p><i>The comments that the structure plan is inconsistent with EPA Policies or their intend appear to be generic or do not related to the Precinct 8 Structure Plan, as per below</i></p>	

No.	Summary of Submission	Administration Comment	Recommendation
	<p>Department may consider that Stage 1 in Figure 1.16 in the District Structure Plan (October 2020) could progress if OFFICIAL</p> <p>appropriate land is being set aside for flood management and there is provision for future connection to a district scale groundwater management scheme. Consideration of local water management strategies for Stages 2 and 3 would be made once the district scale solution was resolved.</p> <p>Planning requirements and technical matters for the area that must be undertaken prior to structure planning were detailed in the following sections of the DWMS: 5.1 <i>Protection of important environmental assets and water resources</i>, 5.2 <i>Management of groundwater at district scale</i>, 5.2.4 <i>Construction & Governance options</i>, and 6.3 <i>Developer contributions plan requirements</i>.</p> <p>EPA Services Advice</p> <p>The Department's EPA Services Branch have undertaken a preliminary review of the supporting information and these additional comments are provided in Attachment 1.</p> <p>Conclusion</p> <p>Given that critical planning matters required by the District Structure Plan and the DWMS have not yet been finalised, and considering the potential impacts on environmental values, the Department of Water and Environmental Regulation does not support the proposed Local Structure Plan for Precinct 8.</p> <p>Attachment 1</p> <p>EPA Services Branch comments:</p> <p>Based on the information provided in the Local Structure Plan (LSP) and attached Environmental Assessment Report (EAR), a key concern is that the quantification of impacts to environmental values is not stated; for example the EAR states the following values occur within the LSP:</p> <ul style="list-style-type: none"> • 24.8 hectares (ha) Banksia Woodlands Threatened Ecological Community (TEC) EPBC Act • 8.48 ha FCT SCP 20a State TEC <i>Banksia attenuata</i> woodlands over species rich dense shrublands • 58.3 ha of black cockatoo foraging habitat. <p>No quantification of residual impacts from implementing the LSP are provided.</p> <p>Based on the information provided from the EAR figures, the impacts to clearing of flora and vegetation values and threatened Black Cockatoo foraging habitat could constitute significant impacts. Recent appeal determinations the Minister for Environment has stated that all remaining foraging habitat on the Swan Coastal Plain is critical to the survival of black cockatoo species, regardless of quality. The LSP will potentially restrict the dispersal and exacerbate the isolation of fauna populations and fragmentation of habitat remaining in the</p>	<p>9.1.1 - <i>The LSP is located on cleared land as much as possible and protects more of the native vegetation that envisaged in the approved EWDSP. All of the vegetation in the highest condition is retained and areas of degraded vegetation in the buffer to the lakes will be revegetated, enhancing the environmental values of these areas.</i></p> <p>9.1.2 - <i>This comment is not relevant to the Precinct 8 Structure Plan. The Structure Plan shows a road along the boundary of the lakes (except in areas that have adjoining POS to ensure the connectivity of the vegetation in upland and wetland areas remains) as well as around all areas of native vegetation to be retained (refer Workplan 1 of the EAR). The larger blocks of native vegetation are retained.</i></p> <p>9.1.4 - <i>This comment is not relevant as the Precinct 8 Structure Plan retains the only two wetlands, Mariginiup and Little Mariginiup Lakes, a buffer of greater than 50m around the majority of the perimeter along with upland vegetation associated with the lakes.</i></p> <p>9.2.1 - <i>This comment is also not relevant as the Structure Plan shows a hard edge around all retained native vegetation and no active recreation areas are proposed to be located immediately adjacent to native vegetation</i></p> <p>9.2 - <i>The Structure Plan area is highly fragmented with no vegetated corridors. The LSP shows a linkage corridor from Mariginiup Lake, through Little Mariginiup Lake to Lake Adams provided an ecological linkage between areas. The linkage includes areas of natural vegetation in the Parklands on Lot 6 Pinelake Trail, areas of POS and trees to be retained in a widened road reserve. The LSP also retains areas of upland vegetation linked to the lakes as well as areas of vegetation to provided</i></p> <p>9.2.5 - <i>The detailed management measures for native vegetation is and will be required at subdivision stage with the preparation and</i></p>	

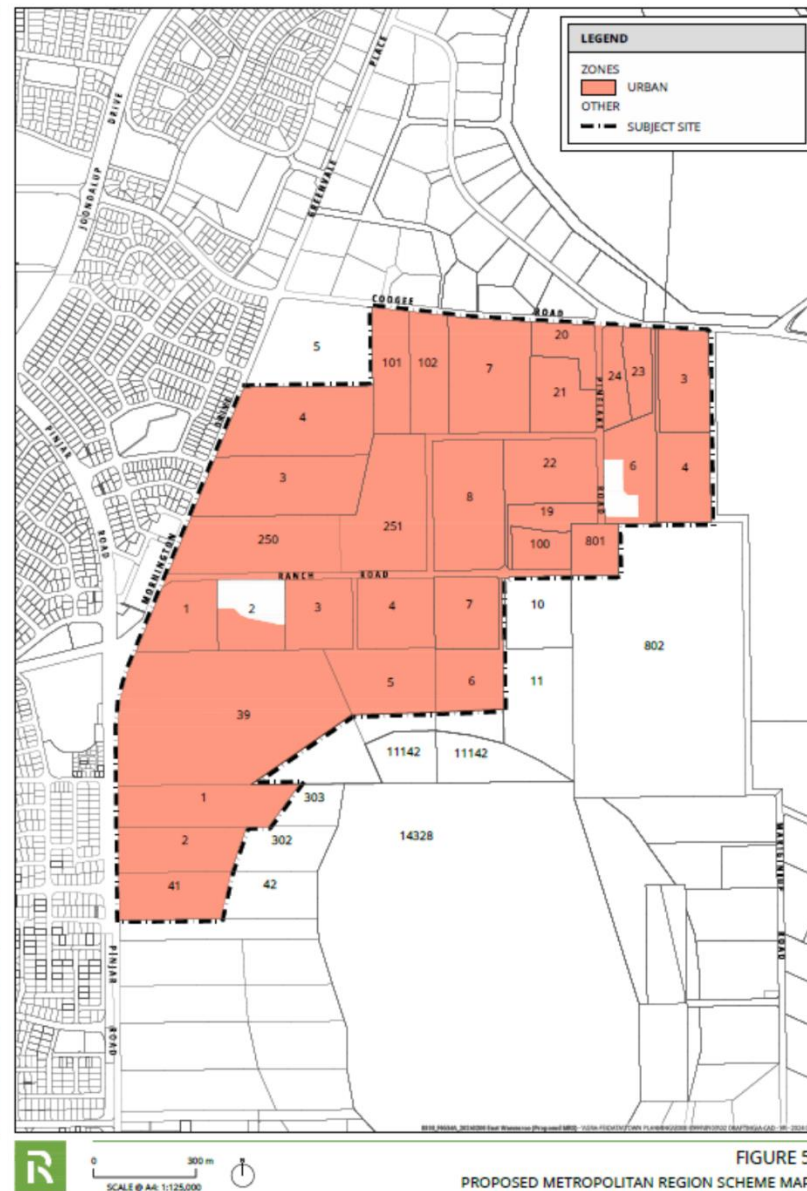
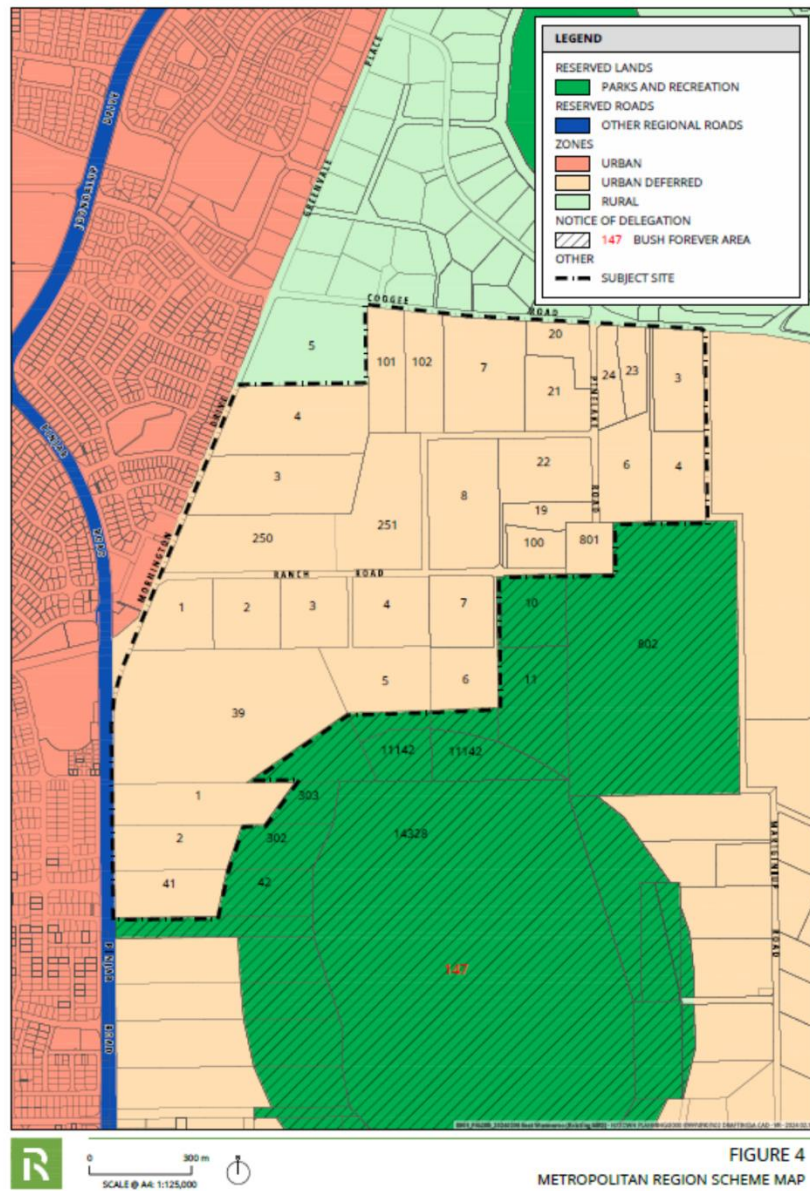
No.	Summary of Submission	Administration Comment	Recommendation
	<p>local area. Currently the EAR does not fully consider the potential regional significance and diversity of the fauna in the LSP area.</p> <p>Noting the lack of information, the LSP will result in a further incremental and net loss to the remaining extent of black cockatoo habitat on the Swan Coastal Plain and should be modified to adequately secure, protect and manage the environmental values within the area; impacts should first be avoided or minimised. EPA Services reiterates that regionally significant natural areas in the Perth and Peel regions remain priorities for retention and protection. The EAR does not adequately address it's intended scope to "assess the environmental impact of the proposed Structure Plan for Precinct 8". Some potential impacts to environmental values are quantified but spatial representation of areas proposed to be impacted or retained is not provided within the EAR. Without information about location of the proposed impacts, an assessment cannot be made of the significance of impacts. Figures should be provided within the EAR to represent flora and vegetation values in relation to impacts.</p> <p>Indirect impacts from changes to hydrology, further spread of weeds or disease, and fragmentation are not addressed or quantified within the EAR. Similarly, no information is provided about potential mitigation, or management of indirect impacts.</p> <p>The LSP is inconsistent with a number of EPA policies or their intent. EPA s16(k) Guidance for planning and development: Protection of naturally vegetated areas in urban and peri-urban areas should be considered against the LSP, in particular:</p> <ul style="list-style-type: none"> 9.1.1 Locate development on existing cleared land: the LSP should limit development to already cleared land. 9.1.2 Protect large blocks of naturally vegetated areas: the LSP increases the edge to area ratio of retained vegetation, and does not use hard edges such as fences immediately adjacent to retained naturally vegetation areas and wetland buffers to separate private land uses and provide bushfire access. 9.1.4 Retain naturally vegetated areas in locations prone to degradation: The LSP does not retain vegetation on and around wetlands that support a variety of ecosystem services including stormwater infiltration. Note that this design guidance aligns with the clearing principles. 9.2.1 Locate and manage land uses and development around retained naturally vegetated areas to avoid or minimise adverse impacts: turf for passive and active recreation areas should be separated from retained vegetated areas and wetlands by hard edges to avoid exposure to pollutants such as fertilizers and increased water runoff from irrigation, and water sensitive design is recommended to minimise impacts on adjacent vegetation from increasing or decreasing availability of water, particular near proposed Waster Water pumping stations. 	<p><i>implementation of an approved Vegetation and Fauna Management Plan or similar, with WAPC Model Conditions providing for this requirement.</i></p> <p><i>9.3.1 – The Structure Plan area is already highly fragmented, and an ecological north-south corridor is proposed – linking two major natural areas in the area. Stormwater infiltration is addressed in the LWMS</i></p> <p><i>EPA Guidance 33 (2008)</i></p> <p><i>This comment does not seem relevant to the Structure Plan as a 50m buffer with additional POS is retained around the two lakes – refer to Workplan 1. A site specific buffer assessment was provided in the East Wanneroo Precinct 8 Wetland Buffer Assessment and Foreshore Strategy which the Department has commented on, with subsequent management plans being funded and prepared via the East Wanneroo DCP.</i></p> <p><i>Surveys</i></p> <p><i>The EAR is clear by statin specifically that the flora and vegetation is described by collating a number of vegetation surveys and specifies that "Detailed Flora and Vegetation surveys undertaken in the Structure Plan area, of which 224 are native species and 56 (20.4%) are weed species (Tauss, 2010, Strategen, 2018, Emerge, 2018 and 2021, PGV Environmental, 2023a and 2023b)"</i></p> <p><i>Methodologies and quadrat locations as per table attached.</i></p> <p><i>Significant Flora</i></p> <p><i>Survey details are provided as Attachment 1 to the EAR.</i></p> <p><i>Significant Vegetation</i></p> <p><i>Lot 7 Coogee Road was not considered a patch that represented the TEC as the vegetation at the southern end of the site first of all has very little Banksia trees to be the TEC and secondly, is only around 0.5ha which is below the requirement for Good and Very Good condition vegetation. Lot 22 is not dominated by Banksia species but Jarrah</i></p>	

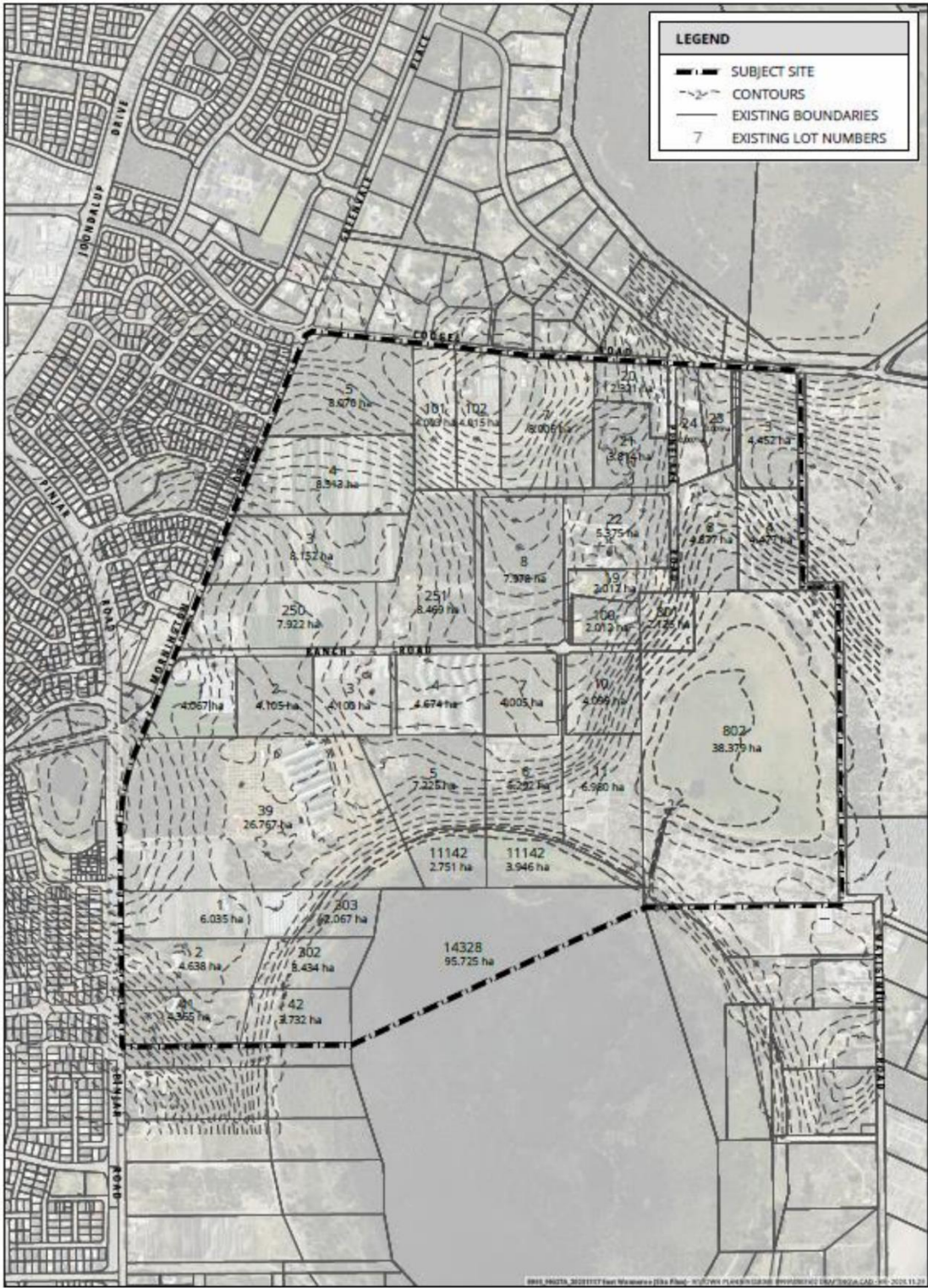
No.	Summary of Submission	Administration Comment	Recommendation
	<ul style="list-style-type: none"> 9.2. Ensure retained naturally vegetated areas are connected to other naturally vegetated areas via ecological linkages: the LSP disrupts or breaks ecological linkage, but should be enhanced where possible. 9.2.5 Ensure clear and ongoing management responsibilities in retained naturally vegetated areas: the proposed management measures of the retained areas within the LSP and the proposal construction and future land uses on the adjacent natural areas are not clearly stated. 9.3.1 Restore the ecological function of impacted naturally vegetated areas: the LSP does not restore ecological linkage, enhance wildlife habitat or stormwater infiltration. <p>EPA Guidance 33 (2008) states for the purposes of the environmental impact assessment process, the EPA considers that conservation category wetlands (CCWs) are of high conservation significance and require a high level of protection. The EPA advised that all CCWs and appropriate buffers be fully protected and stated wetlands that are to be protected require a minimum 50 metre buffer distance. The LSP indirectly impacts wetlands and buffer areas. Consideration of a site specific buffer assessment may also be required. The EPA has also previously reiterated, in its 2015 s16(e) advice to the Minister for Environment; <i>Perth and Peel @3.5 million – Environmental Impacts Risks and Remedies</i> that regionally significant natural areas in the Perth and Peel regions remain priorities for retention and protection. The natural areas of the LSP include sufficient values of rarity and wetlands that may meet several of the EPA's six criteria for regional significance. Specific advice regarding surveys undertaken to inform the LSP is provided below:</p> <p>Flora and Vegetation</p> <p><i>Surveys</i></p> <ul style="list-style-type: none"> The information provided within the EAR does not adequately characterise the flora and vegetation values. Some descriptions are provided about the existing environment; however, these appear to be collated from numerous flora studies not included for review. While the studies used have been listed, there is limited information about what data was collected during each study; the adequacy of survey cannot be determined as no methodologies are provided and it is unknown whether data was collected consistent with contemporary guidance (EPA 2016a and DBCA 2024). It is recommended that a consolidated flora and vegetation report is provided, including methodologies used for collection and analysis of all data, and integrated represented as figures, clearly showing level of survey undertaken over each area (quadrat locations and track logs) labelled with survey name and year for assessment of methodology). <p><i>Significant flora</i></p> <ul style="list-style-type: none"> The EAR stated that no conservation listed, or otherwise significant flora, were recorded within the survey area/s. However, confidence in this conclusion is low 	<p><i>and Sheoak and does not meet the definition of the TEC.</i></p> <p><i>The reference is to the Department of Biodiversity, Conservation and Attractions 2018 South West Vegetation Complex Statistics Report which is referenced in the reference section and publicly available:</i></p> <p><i>https://catalogue.data.wa.gov.au/dataset/8acc8ec9-a41b-491e-ad27-af8087c52cea/resource/3d067960-2896-42fd-ba52-1aa46b2edf13/do</i></p> <p><i>Significant Vegetation – Inland Waters</i></p> <p><i>This entire section is completely irrelevant to Precinct 8.</i></p> <p><i>These wetlands are not located within Precinct 8. The only wetlands are Mariginiup Lake and Little Mariginiup Lake and these are proposed to have buffer of greater than 50m and the retention of associated uplands of existing vegetation proposed to be retained.</i></p> <p><i>We would point out that these comments relate to these mapped wetlands to Precinct 15 Structure Plan and have been copied across verbatim.</i></p> <p><i>Terrestrial Fauna</i></p> <p><i>These comments are not relevant to the Precinct 8 Structure Plan as the comments appear to relate to an entirely different area and set of reports.</i></p>	

No.	Summary of Submission	Administration Comment	Recommendation
	<p>without evidence that appropriate surveys were undertaken. EPA guidance (EPA 2016a) recommends a likelihood analysis be undertaken followed by targeted survey at the appropriate level of intensity and time of year for each potential species.</p> <p><i>Significant vegetation</i></p> <ul style="list-style-type: none"> There are multiple examples of the 'Banksia Woodlands of the Swan Coastal Plain TEC within the survey area. Table 8 (EAR) lists each remnant patch and whether it is considered to meet the TEC criteria (DEE 2016). Areas on Lot 7 Coogee Road and Lot 22 Ranch Road both appear to meet the size and dominant vegetation criteria, but the EAR concludes they do not represent the TEC, but does not provide adequate justification or evidence. It is not clear why these areas were not considered representative; further information should be provided to clarify which criteria were not met. Additional to the listed Flora and Vegetation surveys (Section 3.6), the EAR notes information presented in other reports, for example, "the status of each vegetation association mapped on the site is shown in Table 6 (DBCA, 2018)" (EAR, p. 22). These reports have not been provided. Historical reports should be included as appendices or relevant information should be included within the EAR with sufficient detail to provide the required context. <p><i>Significant vegetation – Inland waters</i></p> <ul style="list-style-type: none"> Seven wetlands identified in the regional dataset are mapped in the Proposal area in the resource enhanced (RE) category: UFIs 14244, 14245, 14247, 14253, 14254, 14261 and 15443. The characteristics of several RE wetlands suggest a reclassification to CCW is warranted. Appendix C describes 12 vegetation units located across the lower-lying areas of the site that are associated with wetland features and contain a number of plant species that are likely to be dependent on wetter soil conditions, such as <i>Eucalyptus rudis</i>, <i>Melaleuca preissiana</i>, <i>Astartea scoparia</i> and <i>Machaerina juncea</i> (p. 148); BaBmKgSi, BiAc, Cc, EmKg, ErAc, ErAs, ErLb, HaRc, Kg, KgAl, Mp and Mt. However, the EAR does not quantify the total wetland area, or wetland area in Good or better condition to reassess the classification of wetlands. The EAR states that the Proposal has been specifically designed to respond to the identified environmental values where possible including the proposed future retention of two resource enhancement (RE) wetlands - unique feature identifiers (UFI) 14244, 14254, 14261 and 15443, covering an area of 21.4 ha in size with provision of 30 m buffer areas in public open space (POS). Four additional RE wetlands not proposed to be retained have vegetation in Good or better condition – UFI 14244, 14245, 14247 and 14253. Impacts to these wetlands should be avoided or minimised. The EAR states that retention "...would inhibit regional sporting field functionality" (Table 11), which is inconsistent with EPA (2021), as above. 		

No.	Summary of Submission	Administration Comment	Recommendation
	<ul style="list-style-type: none"> There are many pathways for indirect impacts from the LSP to wetlands and groundwater including: <ul style="list-style-type: none"> increasing surface water runoff associated with clearing of ground cover groundwater level rise due to removal of native vegetation or changing land use of grazing and horticulture to urban and road development impacts on wetland hydrological regimes potential groundwater quality decrease from introduction of contaminants A nominal 30m buffer is proposed around the retained wetlands. Justification for the size and location of this buffer was not provided. Impacts may not be adequately managed without an analysis of impacts that justify the buffer size. No quantitative assessment or management actions to manage these threats is provided. In the absence of adequate Proposal implementation and ongoing management, there is risk that the wetlands may not be adequately managed. <p>Terrestrial Fauna</p> <p><i>Surveys</i></p> <ul style="list-style-type: none"> Two-season detailed surveys and supplementary targeted surveys for different fauna vertebrate groups were undertaken at suitable times of year, which meets and exceeds the current requirements of EPA guidance (EPA 2020). Hollow inspection at black cockatoo breeding trees was not undertaken at all suitable diameter sized trees (see Appendix G). EPBC Referral Guidelines (2022) states a suitable DBH is 500 mm (or salmon gum and wandoo, suitable DBH is 300 mm). However, Appendix D outlines the reasons for why not all trees were inspected (p. 13). Surveys were inadequate to determine the significance of the site for invertebrate fauna including significant species and short-range endemic invertebrates, which would not meet EPA guidance (EPA 2016b). No specific sampling for invertebrate fauna appears to have been conducted, although suitable habitat is stated as being present (Table 8). <p><i>Significant fauna</i></p> <ul style="list-style-type: none"> Appendix D recorded four significant fauna species within the Proposal during site-specific investigations and fauna trapping: <ul style="list-style-type: none"> Carnaby's black cockatoo (<i>Calyptorhynchus latirostris</i>), listed as 'Endangered' under the EPBC Act and BC Act Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>), listed as 'vulnerable' under the EPBC Act and BC Act Black-striped burrowing snake (<i>Neelaps calonotos</i>), DBCA Priority 3 Quenda (<i>Isodon fusciventer</i>), DBCA Priority 4 In addition, a further ten species of conservation significance were identified as 'possible' to occur within the Proposal due to the presence of suitable habitat: 		

No.	Summary of Submission	Administration Comment	Recommendation
	<ul style="list-style-type: none"> ○ Douglas's broad-headed bee (<i>Hylaeus globuliferus</i>), listed as 'critically endangered' under the EPBC Act and BC Act ○ Chuditch (<i>Dasyurus geoffroii</i>), listed as 'vulnerable' under the EPBC Act and BC Act ○ Pacific swift (<i>Apus pacificus</i>), listed as 'migratory' under the EPBC Act and BC Act ○ Peregrine falcon (<i>Falco peregrinus</i>), listed as 'other specially protected' under the BC Act ○ Spiny katydid (<i>Austrosaga spinifer</i>), DBCA 'priority 2' ○ Swan Coastal Plain shield-backed trapdoor spider (<i>Idiosoma sigillatum</i>), DBCA 'priority 3' ○ A short-tongued bee (<i>Leioproctus contrarius</i>), DBCA 'priority 3' ○ Woollybush bee (<i>Hylaeus globuliferus</i>), DBCA 'priority 3' ○ Graceful sun-moth (<i>Synemon gratiosa</i>), DBCA 'priority 4' ○ Western brush wallaby (<i>Notamacropus irma</i>), DBCA 'priority 4' • Of note, Appendix D discusses that although the Proposal area contains a high degree of modified or degraded habitat, the surveys recorded two mammal species that are now rare in the fragmented Perth metropolitan area: the echidna and honey possum (p. 34). In addition, the high number (68 native species) of vertebrate fauna species recorded including species listed in Bush Forever (Appendix E) indicates that the Proposal area has high potential values to fauna. These are significant records for the area and highlight the Proposal area's potential importance as a habitat refuge within the cleared landscape. • Despite its degraded state, the location of the Proposal area may be of importance to fauna for habitat connectivity between Bush Forever Sites 147 and 324, and remnant bushland within surrounding areas including State Forest. 		





Attachment 10 - East Wanneroo Proposed District and Neighbourhood Facility Provision and Location

Figure 1.1 East Wanneroo District Structure Plan

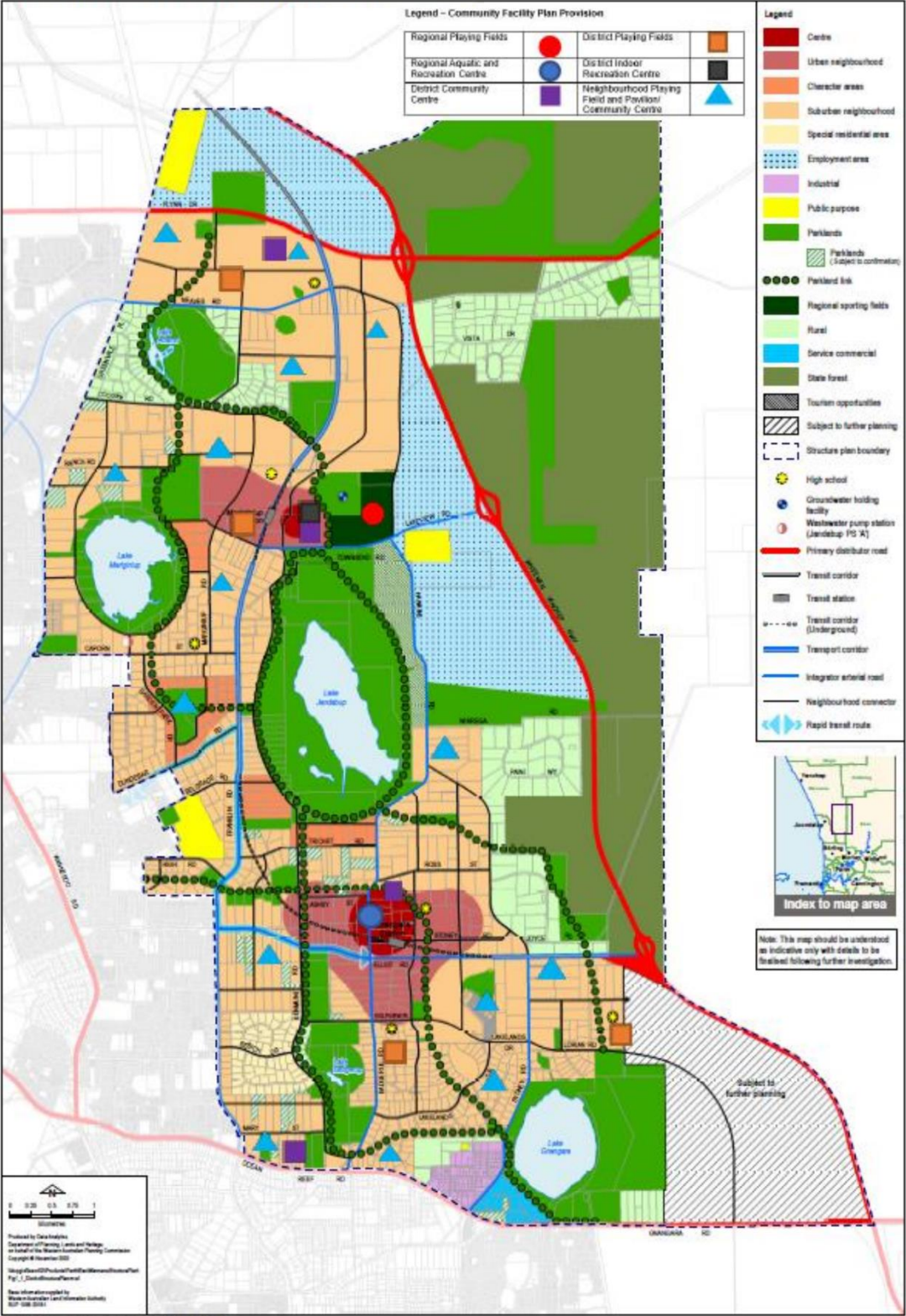




Figure 15 – Public Open Space Plan

Precinct 8, East Wanneroo – Public Open Space Schedule
Various Lots, Ranch Road, Mariginiup - East Wanneroo

15.02.2024			
Site Area (Structure Plan Area Boundary)			262.03
Less			
Existing P&R Reserves			
Lot 802 Mariginiup Road	38.35		
Lot 10 Ranch Road	4.10		
Lot 11 Ranch Road	6.98		
Portion of Lot 6 Ranch Road	1.50		
Portion of Lot 5 Ranch Road	1.44		
R 40696 Ranch Road (Western Lot)	2.75		
R 40696 Ranch Road (Eastern Lot)	3.94		
Portion of Lot 39 Pinjar Road	3.89		
Lot 303 Pinjar Road	2.07		
Lot 302 Pinjar Road	3.43		
Lot 42 Pinjar Road	3.73		
Portion of Lot 14328 Pinjar Road	15.42		
Total Existing P&R Reserves		87.60	
Existing Road Reserves			
Ranch Road	4.21		
Pinelake Trail	1.18		
Total Existing Road Reserves		5.39	
Net Site Area			
			169.04
Deductions			
Primary School	3.50		
Dedicated Drainage (1:1yr ARI / First 15mm)	1.20		
Parklands (Proposed P&R Reserve) Portion Lot 5 Mornington Drive	3.01		
Parklands (Proposed P&R Reserve) Portion Lot 2 Ranch Road	2.13		
Parklands Subject to Confirmation Portion of Lot 6 Coogee Road	1.17		
Wastewater Pump Station (Portion of Lot 801 Ranch Road)	0.04		
Total Deductions		11.05	
Gross Subdivisible Area			157.99
POS @10%			15.80
Public Open Space Contribution			
May comprise:			
Min 80% unrestricted POS		12.64	
Max 20% restricted use POS		3.16	
Total Required POS			15.80

POS Reference Number (area within urban zone/LSP boundary only)		1:1yr / First 15mm Drainage (m ²) <i>Deduction from Net Area</i>	Unrestricted POS area (m ²)	Credited Restricted POS area (m ²)
1a	5090	190	4260	640
1b	2920		2920	
2	4028	190	3348	490
3	3498	164	2948	386
4	4591	282	3141	1168
5	8927	317	8610	
6a	190		190	
6b	7538	949	6589	0
7a	1300		1300	
7b	572		572	
8	6835	829	3445	2561
9a	3938	392	3546	0
9b	22038		22038	
9c	2047		2047	
10	7559	475	7084	0
11	3646	353	3293	
12	3679	497	3182	
13a	7521	372	7149	
13b	2210	372	1838	
13c	3655		3655	
13d	3317		3317	
14a	3360	372	2988	0
14b	1560		1560	
15	7364	718	1444	5202
16	2116	475	1641	
17a	4069	949	3120	
17b	4497	562	3935	
17c	26058	429	25629	
17d	5896		5896	
18	28986	532	26858	1596
19	2693	282	1153	1258
20	4682	1607	3075	
21a	804	433	371	
21b	421		421	
22	8902	282	8620	
Total	206507	12023	181183	13301
	20.50	1.20	17.97	1.33
Percentage of gross subdivisible area	13.07%	0.76%	11.47%	0.84%

Table 16: Public Open Space Schedule



Attachment 7

Landscape Strategy



East Wanneroo Precinct 8 (Ranch Road)



Document Control

Date	Revision	Author	Version Description	Reviewer	Review Date
19.01.2024	A	C.Taylor	Internal Review- DRAFT	C.Taylor	19.01.2024
07.03.2024	B	C.Taylor	Client Issue	C.Taylor	07.03.2024
15.03.2024	C	C.Taylor	Final	C.Taylor	15.03.2024

considered
[kənˈsɪdəd]
ADJECTIVE
having been thought about carefully

space
[speɪs]
NOUN
the dimensions of height, depth, and width within
which all things exist and move

Contents

01. Landscape Principles

02. Landscape Intent

03. Opportunities & Constraints

04. Landscape Strategy

- Landscape Master Plan
- Street Tree Master Plan
- Open Space Reference Plan
- Landscape Facilities Plan

05. Landscape Concept Plans

06. Streetscapes

07. Softscape Planting



01. Landscape Principles

The Ranch Road (Precinct 8) Structure Plan in East Wanneroo has been planned to provide a network of interconnecting parklands, which connects to and enhances ecological & cultural corridors, wetlands, lakes, bushland and aims to contribute to the ecological and social fabric of the Ranch Road precinct and greater East Wanneroo community.

Being strategically located, the proposed public open space areas will provide accessibility and connectivity through the development whilst also playing an important role in protecting the sites natural assets which are unique to the Ranch Road locale.

The key Landscape Principles to be explored during the design phase shall be:

- A suburban neighbourhood carefully **integrated within a parkland setting and environment**, with the elements that define Ranch Road as a place, is an avenue that is to be explored and referenced in the design of the landscape.
- **Respecting the cultural and ecological corridors** and incorporating these into the Public Open Space (POS) network and adopting a programme of enhancement through revegetation and rehabilitation.
- Provide a **highly legible network of walking and cycle paths** linking the areas of public open space, schools, Mariginiup Lake, Little Mariginiup Lake within the Ranch Road precinct as well as connecting with the greater East Wanneroo district.
- **Retention of existing vegetation** via incorporation into public open space and Parklands.
- **Create street environments that can contribute to placemaking and activation.**
- Provision of **street tree planting** which provides amenity and upon maturity a continuous canopy of shade.
- **Natural features are retained** and enhanced within open space and streetscapes.
- **Views** to Mariginiup Lake & Little Mariginiup Lake to the south, and Adams Lake to the north are to be framed through the street layout, Parkland links and enhanced through sensitive and considered landscape design.
- Views into the site and outwards from the site are to be screened and framed where appropriate to retain a sense of parkland context.
- Appreciation that a balanced approach is required to ensure the social and recreational requirements of the future residents are balanced with the existing cultural & ecological site conditions and the engineering constraints imposed by the site.
- Provide connections to the existing Lake Mariginiup Bush Forever Parkland site to the south.
- Provide a **balanced variety of outdoor public space** for recreational and social opportunities appropriate to the size of the proposed community.
- Mitigate post development drainage flows through incorporation of upstream treatment within the open space network. Ensure drainage sites are treated in such a way so as to allow multiple public use.



02. Landscape Intent

Proposed Planting in the Public Realm

The provision of planting in public open space areas and streetscapes serves to provide character, shade, interest, habitat and a point of reference in major streets or feature locations.

The locations of planting and types of vegetation will include;

- Predominantly native tree species are to be nominated throughout the Ranch Road Precinct.
- Exotic specimen, shade and historical/cultural reference trees are to be nominated in Pocket, Local and Neighbourhood parks as well as high profile street or entry locations.
- Smaller scale exotic trees may be nominated in feature locations and avenue plantings to secondary residential streets,
- Bushland and habitat regeneration in disturbed areas,
- Shrub planting to screening and to provide spatial definition,
- Groundcover planting to medians, verges and areas requiring clear views,
- Sedge planting to swales and basins,
- Irrigated grass to informal usable space and recreation areas,

The proposed mix of native species and exotic cultural plantings in feature locations will provide a variation of character and define feature points. In general POS planting shall be composed of no less than 95% native vegetation.

The selection and placement of species shall consider adjacent elements so as to limit future maintenance and public health and safety issues. It will promote the survival and health of the existing vegetation while also provide ongoing social and visual benefits. Items of consideration may include;

- Proximity to traffic sightlines to ensure suitable view corridors,
- Proximity and alignment to underground services to ensure no adverse impact,
- Seasonal influence of shade on adjacent facilities and areas,
- Passive solar benefits influencing adjacent built form and residential dwellings,
- Provision of seasonal visual colour,
- Provision of a seasonal food source to local fauna,
- Plant selection based on suitability to local climate, soils, rainfall and temperatures,
- Selection based on reduced maintenance, trimming, pruning, fertilising and watering.
- Develop a species palette with subtle variations through the development to tie in with identifiable communities and existing streetscapes.
- Buffer screening will be provided to residential or sensitive areas where required.
- Fringing vegetation to the surrounding areas is to be retained and protected.

Refer to section 07 for proposed species lists (note final species to be confirmed during the landscape subdivision approval process with the City of Wanneroo).

Street trees

Street trees are a desirable design element to increase shade, promoting walkability and a pedestrian orientated Ranch Road precinct. The selection and placement of street trees shall vary dependant of the road hierarchy. Along major roads, street trees will form a strong visual avenue, and not impede traffic flow, safety or sightlines.

In residential streets, the roads may vary in character throughout the precinct; however, they are characterised as smaller scale pedestrian friendly environments. Therefore, street trees will be of a smaller scale, and take advantage of passive solar principles allowing summer shade and winter sun. As the road reserve widths may vary to allow for the retention of existing vegetation and the interconnection of the retained parklands and public open space network, it may be possible to allow for clustering or grouping of trees in the road reserve. This will be reviewed at the detailed design phase.

Water Wise Planting

It is intended that local species shall be used where suitable to maximise local habitat advantage and minimise water dependence. Soil amendments will be used in order to reduce leaching and increase soil moisture holding capacity. All garden beds will be mulched to reduce water loss through evaporation.

Irrigation Strategy

In general terms the project is committed to undertaking water sensitive urban design with minimal impact on existing groundwater and the preservation of water quality. The project is also committed to minimising the volume of water used for irrigation. The following principles are held.

- Minimise the extent of irrigation and the volume of water consumed
- Minimise the extent of irrigated turf
- Minimise the extent of long term irrigation usage to planted beds
- Use of hydrozoning
- Use of xeriscaping where practical.

Water application shall be based on seasonal need and be constructed of reliable, readily available and cost effective fittings, infrastructure and materials. Hydrozoning principles shall be incorporated at the detailed design stage.

All irrigation shall be installed to the local authority's standard specifications and industry best practice. Maintenance minimisation processes will apply in all circumstances. Irrigation shall be designed to incorporate stations that can be terminated as agreed upon planting establishment and maintenance handover to the City of Wanneroo in accordance with relevant policies.



02.

Drainage/Stormwater

The development aims to utilise water sensitive urban design principles covering the following:

- Stormwater treatment in POS areas.
- Treatment areas to collect stormwater runoff.
- Dedicated first flush areas to capture sand and silt from development areas.
- Sedge and fringing vegetation to swales to provide a nutrient stripping function.

It is important that proposed treatment areas provide for multiple uses including recreation, storm water management and both the retention and creation of natural habitat.

Drainage Treatments

All stormwater from the development will be directed into a system of treatment areas integrated and constructed within the public open space and / or adjacent road reserves. These devices will be sized to treat the flows from the small rainfall event in accordance with the principles of the Department of Water and Environmental Regulation (DWER) and greater stormwater strategy provided within the Ranch Road Local Water Management Strategy (Pentium Water, 2024).

As the East Wannon District Structure Plan (EWDSP) identifies all Conservation Category Wetlands (CCW) as Parklands, it is anticipated that the CCW's will be integrated with the drainage network incorporated into local open space areas, providing the opportunity to restore and enhance the biodiversity of these areas.

The following general principles will be adopted wherever possible in the landscape design to assist the drainage treatment of stormwater and preservation of groundwater for irrigation purposes.

- Promote the use of native plants with low water and fertiliser requirements.
- Promote landscape treatments sympathetic to climate conditions and prevailing site conditions – e.g. soil types, topography, environment, wetlands etc.
- Utilise "cluster or clump" plantings to provide useable shade areas and better use of reticulated water in preference to single item or symmetrical planting regimes.
- Irrigate grass and garden areas at appropriate time so as to reduce evaporative loss.
- Ensure that irrigation regime is responsive to prevailing weather conditions.



Retained Vegetation

A key goal in the Ranch Road Local Structure Plan is the retention and protection of existing vegetation. Detailed flora surveys have been undertaken to assess the type and condition of the remnant vegetation across the precinct, with the results summarised within the East Wannon Precinct 8 Environmental Assessment Report (PGV Environmental, 2024) and the East Wannon Precinct 8 Wetland Buffer Assessment and Foreshore Strategy (PGV Environmental, 2024). This assessment has been utilised in determining the suitability of these areas as Parklands and areas of vegetation identified for retention within public open space. The retention of existing vegetation in defined locations caters for existing habitat, preserves natural assets and provides visual relief against the broader development area.

Whilst areas of the vegetation on site has suffered through the effect of the various past land uses and management, the areas of remnant vegetation offer positive outcomes if the development can be engineered to protect these areas. The retention of vegetation shall be maximised through the proposed location of public open space and the considered alignment of road reserves and lot boundaries.

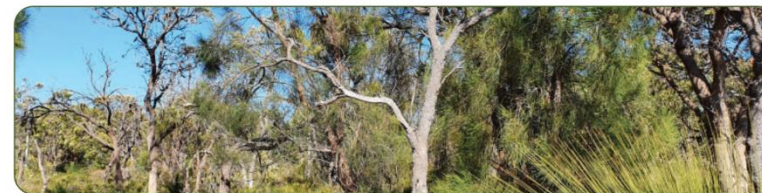
Vegetation proposed for retention includes (but not limited to):

- Banksia Woodland TEC (Threatened Ecological Communities)
- TEC Floristic Community Type 20a ('Banksia attenuata woodlands over species rich dense shrublands')
- Vegetation rated as 'Good' condition or better

Retention and Protection

The retention and protection of defined existing vegetation shall occur during construction, following building works and in conjunction with maintenance. Retention and protection strategies shall include;

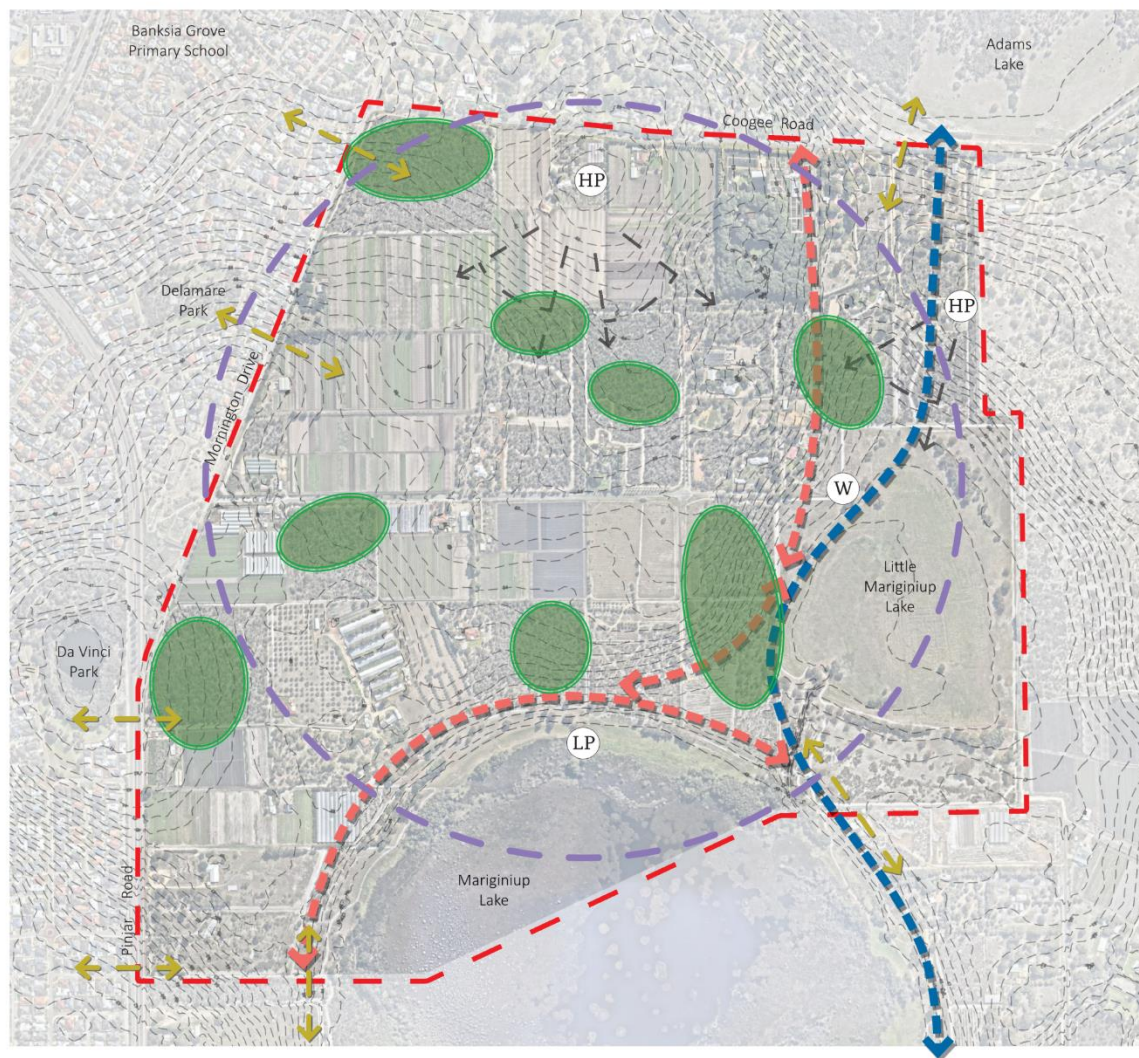
- Temporary fencing and signage to all retained areas and individual specimen trees
- Ripping or compaction within 3m of the drip line of existing trees to be prohibited.
- In order to restrict the spread of exotic weeds, the construction of clearly defined and easily maintained boundaries between retained vegetation and ornamental landscape may include such methods as footpaths, roads, trails and permanent fencing.



Considered
Space

East Wanneroo Precinct 8 (Ranch Road)

03. Opportunities & Constraints



Legend

- Precinct 8 Boundary
- HP High Point
- LP Low Point
- W Future Waste Water Pump Station
- EWDSP Proposed Parkland Link
- Proposed Parkland Link Realignment / Extension
- 800m Walk
- Pedestrian Desire Connections
- Key Views / Sightlines
- Retained Vegetation



Drawing Number QPG003 : LSP :O&C

Revision C

Date MAR 2024

Scale 1:10,000 @ A3

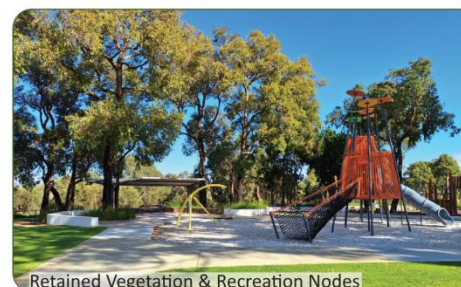


0 100 200 300 400 500m

Considered Space

04. Landscape Strategy

East Wanneroo Precinct 8 (Ranch Road) Landscape Master Plan



Drawing Number QPG003 : LSP :MP
Date MAR 2024

Revision C
Scale 1:10,000 @ A3



0 100 200 300 400 500m

Considered
Space

04.

East Wanneroo Precinct 8 (Ranch Road)
Street Tree Master Plan



Agonis flexuosa
WA Peppermint Tree



Corymbia ficifolia
Red flowering gum



Eucalyptus torwood
Hybrid Coral Gum



*Eucalyptus gomphocephala**
Tuart



Eucalyptus tottiana
Coastal blackbutt



Eucalyptus victrix
Little ghost gum



Eucalyptus marginata
Jarrah



Eucalyptus torquata
Coral gum



Eucalyptus woodwardii
Lemon-flowered gum

* located in median island only

Drawing Number	QPG003 : LSP :STMP	Revision	C
Date	MAR 2024	Scale	1:10,000 @ A3

N

0 100 200 300 400 500m



04.

East Wanneroo Precinct 8 (Ranch Road)

Open Space Reference Plan



Public Open Space Type & Reference

- 1 Public Open Space a Parkland

Public Open Space Summary

- **Pocket Park**
 - Passive recreation function (places for relaxation & respite).
 - Shade trees with small breakout areas of irrigated turf.
 - Internal path network for bikes and scooters.
 - Internal path network connecting into the broader path network.
 - Bench seating & Nature Play elements.
- **Local Park**
 - Small scale recreation function with active & passive experiences.
 - Shade trees with areas of irrigated turf.
 - Areas for short dog walking and respite points.
 - Picnic settings, shelter, bench seating & shaded play space.
 - Stormwater drainage function.
 - Retention of existing trees & vegetation.
- **Neighbourhood Park**
 - Medium scale recreation function with active & passive experiences.
 - Incorporate accessible remnant bushland areas.
 - Potential to provide recreational, sports and nature area functions.
 - Shade trees with large open areas of irrigated turf.
 - Multiple seating, picnic settings and shelter opportunities.
 - Medium to large shaded play space with universal access equipment.
- **Parkland**
 - Consisting of wetland areas, bushland vegetation, open space and local parkland interconnected by streetscapes and Parkland Links with passive recreation function.
 - Accessible areas of remnant bushland and conservation areas.
 - Internal circulation paths, boardwalks & walk trails linking with external pedestrian and cycle paths.
 - Retention of existing trees & vegetation.
 - Opportunity to restore and enhance biodiversity via weed removal and revegetation.
 - Access for maintenance, service and emergency vehicles.
 - Opportunity for complementary landscaping including water wise garden bed and tree planting.
 - Informal seating & picnic settings opportunities.
 - Educational signage.



Drawing Number QPG003 : LSP :OSRP
Date MAR 2024

Revision C
Scale 1:10,000 @ A3



0 100 200 300 400 500m

East Wanneroo Precinct 8 (Ranch Road)

Landscape Facilities Plan

04. Landscape Strategy



Public Open Space Type & Reference

- 1 Public Open Space a Parkland

Landscape Facilities Legend

- Shelter & Picnic Setting
- Picnic Setting
- Bench Seating
- Play Space (major)
- Play Space (minor)
- Nature Play
- Multipurpose Sports Oval
- Passive Kickabout
- Fitness Node
- BBQ
- Drinking Fountain
- Dog Park
- Dog Walking
- Parkland Link
- Walking Trail
- Retained Tree(s)
- Retained Vegetation
- Revegetation
- Educational Signage
- Drainage Basin

Drawing Number QPG003 : LSP :LFP

Revision C

Date MAR 2024

Scale 1:10,000 @ A3



0 100 200 300 400 500m

Considered Space

04.

Public Open Space Typologies

The areas of public open space within the Ranch Road (East Wanneroo Precinct 8) Structure Plan have been separated into broad categories as identified within the EWDSP and the City of Wanneroo Local Planning Policy (LPP) 4.3: Public Open Space. Refer LPP 4.3 for specific treatments and design requirements.

The Ranch Road public open space typologies are as follows:

- Pocket Park
- Local Park
- Neighbourhood Park
- Parklands
- Streetscapes

These are described in detail as follows:

Pocket Park:

Pocket parks are small parcels of POS (under 5,000m²) located throughout neighbourhoods that primarily serve an amenity and passive recreation function, while also providing valuable functions as community meeting places and places for relaxation & respite.

Pocket parks provide for a public 'backyard' and act as a shared open space extension for the residents within their catchment. They are open air respite points which are designed to function as small open space pocket that allows for green relief in residential scale passive spaces of shade trees with small breakout areas of irrigated turf for children to play, path network for bikes and scooters, areas for short dog walking and respite points for lunch breaks, fresh air and stretching.

Pocket parks are generally low maintenance, can incorporate significant trees and/or retained vegetation, may contain drainage infrastructure, and provide an important connectivity role as part of the greater POS network.

Treatment and infrastructure within a Pocket Park can typically include bench seating, small shaded play space, internal circulation paths, tree & existing vegetation retention (where possible), complete landscaping including areas of turf, native revegetation, water wise garden bed and tree planting. Irrigated areas are to be hydrozoned via a groundwater production bore.



Local Park:

Local Parks provide open spaces (5,000m² to 1Ha) which service the regular small-scale recreation needs of the immediate surrounding residential population. The proposed Local Parks will provide attractive public open spaces that cater for a variety of active and passive recreational experiences that will have a positive impact on the quality and efficiency of the public realm. Additionally, they provide resting places, shelter from the elements and allow for passive recreational activities such as dog walking, informal children's play and relaxation.

Local Parks provide opportunities to reflect local character and create a sense of place through retention of significant trees and vegetation, cultural, ecological and physical landmarks.

They are typically located within 400m (5min walk) from other open space areas and can be located on the greater pedestrian path network to maximise access and pedestrian connectivity throughout neighbourhoods and with adjacent public open space. This along with their locations adjacent to residences, maximises passive surveillance in the surrounding area.

Local Parks often play a drainage function in the form of drainage basins and swales as part of the urban water management strategy and while performing a drainage function, these can also aid in the enhancement of a sense of place.

Treatment and infrastructure within a Local Park can typically include bench seating, a shaded play space, picnic shelter and settings, internal circulation paths, increased hardscape areas, tree & existing vegetation retention (where possible), complete landscaping including areas of turf, native revegetation, water wise garden bed and tree planting. Irrigated areas are to be hydrozoned via a groundwater production bore.



Considered
Space

04.

Neighbourhood Park:

Neighbourhood Parks are located throughout the development (1 to 7ha in size) and are similar to local parks but are generally larger and able to provide for recreation & informal active pursuits simultaneously.

They are typically located central to the catchment (within 800m of most dwellings) to maximise accessibility, they are a destination for the local community and may incorporate accessible remnant bushland or conservation areas. They may also serve a recreational, sports or nature area function, provides local residents with areas of turf and planting for kick-about play and passive uses. Their locations adjacent to residences, maximise passive surveillance and may be collocated with primary school facilities to upgrade school playing field to senior capacity or create a community hub.

The Neighbourhood Parks within the Ranch Road precinct includes the integration of areas of retained vegetation and proposed drainage functions.

The landscape treatment and infrastructure within a Neighbourhood Park can typically include multiple seating opportunities, picnic settings and shelters, bbq facilities, drink fountains, medium to large shaded play space with Universal access play equipment, internal circulation paths linking with external pedestrian and cycle paths, security lighting and access for maintenance, service and emergency vehicles.

Neighbourhood Parks include tree & existing vegetation retention (where possible), complete landscaping including areas of turf, native revegetation, water wise garden bed and tree planting. Irrigated areas are to be hydrozoned via a groundwater production bore. Incorporating a single playing field maybe considered by the City of Wanneroo within a Neighbourhood Park.



Parkland:

The Ranch Road Precinct provides for a network of Parklands consisting of wetland areas, bushland vegetation, informal active open space and local Parkland interconnected by a Parkland Link to the east, connecting Mariginiup Lake and Little Mariginiup Lake with Adams Lake to the north. The Parklands are intended to be a network of multifunctional natural environments and landscaped spaces promoting nature and biodiversity conservation, active recreation, cultural and social interaction and educational functions.

Parkland areas within the Ranch Road Precinct consist of the following sub-categories:

- **Local Parkland** - land currently protected as Parks and Recreation reserves in the Metropolitan Region Scheme (MRS) and includes Conservation Category Wetlands (Lake Mariginiup and Little Lake Mariginiup)
- **Proposed Parks & Recreation Reserves** - new areas to be reserved for Parks and Recreation in the MRS.
- **Parkland Links**

Local Parkland

Local Parklands includes all existing local reserves as Parkland, as these areas are established reserves and contribute to the network of parkland links. These existing Parklands are located adjacent to the Lake Mariginiup and Little Lake Mariginiup Conservation Category Wetlands. They contain lake foreshore areas which are highly scenic environments, providing a range of environments from heavily forested wetland vegetation to open flat areas with long views.

There is the opportunity to restore and enhance their biodiversity via weed removal and revegetation and in addition to providing a nature area function with ecological and cultural links, they can also serve as an informal recreational function providing local residents with areas of turf and planting for kick-about play and passive uses.

The landscape treatment and infrastructure within a Local Parkland can typically include multiple seating opportunities, picnic settings and small shelters, bbq facilities, drink fountains, medium shaded play space with universal access play equipment, internal circulation paths linking with external pedestrian and cycle paths, boardwalks, walk trails, educational signage and access for maintenance, service and emergency vehicles.

Local Parkland includes tree & existing vegetation retention, complementary landscaping including areas of turf, native revegetation, water wise garden bed and tree planting. Pockets of irrigated areas are to be hydrozoned via a groundwater production bore.



Considered
Space

04.

Proposed Parks and Recreation Reserves

Proposed Parks and Recreation Reserves are various pockets of remnant vegetation which have been identified as a high priority for protection as these sites are likely to contain:

- Threatened (or potentially threatened) Ecological Communities
- Carnaby Cockatoo foraging habitat
- Representation of the regional vegetation complexes of Karakatta Central and South and Pinjar

The landscape treatment and infrastructure within these Parks and Recreational Reserves will be of a conservation intent with external pedestrian paths, walk trails along existing tracks, educational signage and access for maintenance, service and emergency vehicles.

Key design outcomes in Parklands include;

- Bushland vegetation is protected and enhanced in designated MRS reservations or as part of local reservations, carefully integrated with the surrounding urban environment.
- Walk trails through bushland provide for public enjoyment of the natural environment.
- Significant wetlands are protected and enhanced for their environmental and biodiversity value, and serve an important drainage function.
- Lake foreshore areas are open to public enjoyment with access from the road network.
- Key foreshore areas are enhanced and appropriately treated to provide for recreational activity.
- Regional vegetation complexes are rehabilitated and extended as part of the management of foreshore areas.
- Appropriate areas are utilised for environmental education.
- Aboriginal heritage values are protected as part of the regeneration of wetlands.



Parkland Links

Parkland Links are identified as ecological and cultural linkages throughout the Ranch Road precinct (and greater East Wimmeroo Development Area). The proposed subdivision provides an opportunity to create a link connect the lakes, wetlands, remnant vegetation and proposed POS & Road Reserves.

The amenity and connectivity of these corridors provides for district-wide cycling, pedestrian movement and nature-based education. The Parkland Links comprises of a mixture of Bush Forever, Public Open Space and landscaped streetscapes that provide within the urban environment a neighbourhood promoting a mature tree canopy and extensive landscaping within the corridor or road reserve.

The proposed Parkland Link through the eastern extent of the site (the Pinelake Trail Parkland Link), provides for an important connection linking the Ranch Road precinct with the Lake Mariginiup precinct (07) to the south, Lake Adams precinct (09) to the north and Central Mariginiup precinct (15) to the east. The north / south Parkland Link provides an interconnected pedestrian and cycle path network between Lake Mariginiup, Little Lake Mariginiup and Adams Lake.

Key design outcomes in Parkland Links include;

- Parkland Links are connected by Bush Forever sites, public open space & landscaped boulevards and accommodate uninterrupted pedestrian/ cyclist movement.
- They maintain and enhance ecological linkages through the area.
- Linear parks follow topographic features and link up patches of remnant vegetation.
- Landscaped Boulevards contain mature tree canopy and landscaping within a wide median or verge.



Considered
Space

05. Landscape Concept Plans

East Wanneroo Precinct 8 (Ranch Road) POS 2 (Pocket Park)



- Picnic Setting
- Bench Seating
- Play Space (minor)
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout

OPEN SPACE TYPOLOGY

Pocket Park

SIZE (Excluding Road Reserve)
4,028m²

FUNCTIONS

Include by not limited to;

- Passive recreation function (places for relaxation & respite).
- Shade trees with small breakout areas of irrigated turf.
- Internal path network for bikes, scooters and connecting into the broader path network.
- Areas for short dog walking and respite points.
- Bench seating & Nature Play elements.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees and vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.

DRAINAGE INFORMATION

BASIN ID - B3

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	50
Top Area (m ²):	190

20% AEP Basin

Side Slopes:	1:6
Total Depth (m):	0.54
Volume (m ³):	191
Top Area (m ²):	680

1% AEP Basin

Side Slopes:	1:6
Total Depth:	1.2
Volume (m ³):	785
Top Area (m ²):	1142



Drawing Number QPG003 : LSP : POS2

Revision C

Date MAR 2024

Scale 1:500 @ A3



0 5 10 15 20 25m

Considered Space

05.



- Bench Seating
- Retained Tree(s)
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout

East Wanneroo Precinct 8 (Ranch Road)
POS 3 (Pocket Park)

OPEN SPACE TYPOLOGY
Pocket Park

SIZE (Excluding Road Reserve)
3,498m²

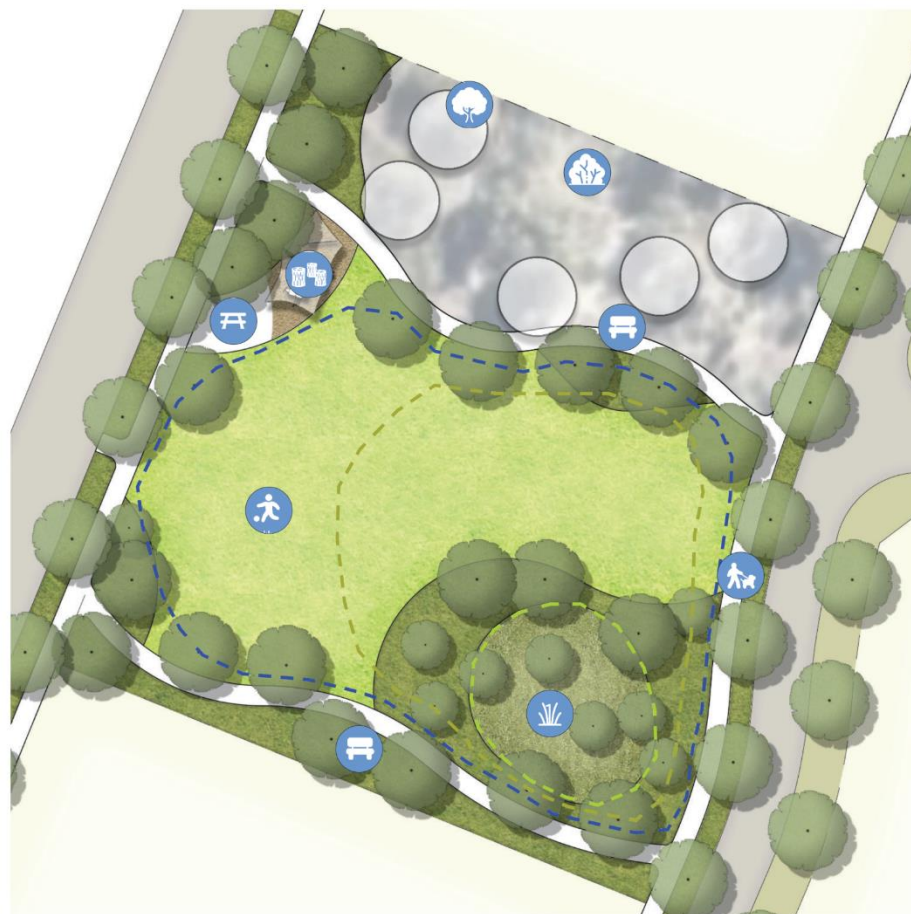
- FUNCTIONS**
Include by not limited to;
- Passive recreation function (places for relaxation & respite).
 - Shade trees with small breakout areas of irrigated turf.
 - Internal path network for bikes, scooters and connecting into the broader path network.
 - Areas for short dog walking and respite points.
 - Bench seating & Nature Play elements.
 - Stormwater drainage function.
 - Sense of Place, capturing historical and cultural character.
 - Retention of existing trees and vegetation.
 - Revegetation of native planting.
 - Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.

DRAINAGE INFORMATION
BASIN ID - B4

FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	43
Top Area (m2):	164
20% AEP Basin	
Side Slopes:	1:6
Total Depth (m):	0.54
Volume (m3):	148
Top Area (m2):	550
1% AEP Basin	
Side Slopes:	1:6
Total Depth:	1.2
Volume (m3):	633
Top Area (m2):	950



05.



- Picnic Setting
- Bench Seating
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)
- Retained Vegetation

East Wanneroo Precinct 8 (Ranch Road)

POS 4 (Pocket Park)

OPEN SPACE TYPOLOGY

Pocket Park

SIZE (Excluding Road Reserve)
4,591m²

FUNCTIONS

Include by not limited to;

- Passive recreation function (places for relaxation & respite).
- Shade trees with small breakout areas of irrigated turf.
- Internal path network for bikes, scooters and connecting into the broader path network.
- Areas for short dog walking and respite points.
- Bench seating & Nature Play elements.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees and vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.

DRAINAGE INFORMATION

BASIN ID - B2

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	76
Top Area (m ²):	282

20% AEP Basin

Side Slopes:	1:6
Total Depth (m):	0.52
Volume (m ³):	360
Top Area (m ²):	1,450

1% AEP Basin

Side Slopes:	1:6
Total Depth:	1.2
Volume (m ³):	1,554
Top Area (m ²):	2,098



Considered Space

Drawing Number QPG003 : LSP : POS4

Revision C

Date MAR 2024

Scale 1:500 @ A3



0 5 10 15 20 25m

05.



-  Picnic Setting
-  Bench Seating
-  Nature Play
-  Dog Walking
-  Passive Kickabout

East Wanneroo Precinct 8 (Ranch Road)

POS 7 (Pocket Park)

OPEN SPACE TYPOLOGY

Pocket Park

SIZE (Excluding Road Reserve)
4,591m²

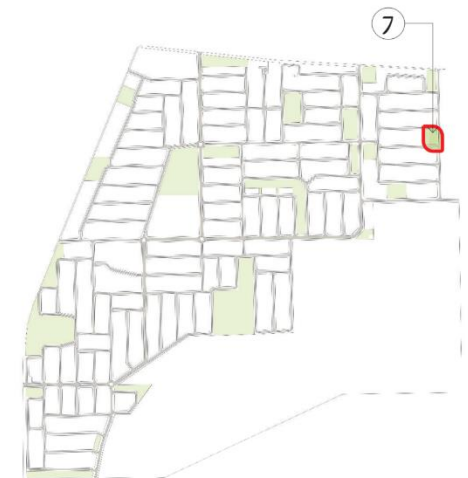
FUNCTIONS

Include by not limited to;

- Passive recreation function (places for relaxation & respite).
- Shade trees with small breakout areas of irrigated turf.
- Internal path network for bikes, scooters and connecting into the broader path network.
- Areas for short dog walking and respite points.
- Bench seating & Nature Play elements.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees and vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.

DRAINAGE INFORMATION

BASIN ID - N/A



Drawing Number QPG003 : LSP : POS7

Revision C

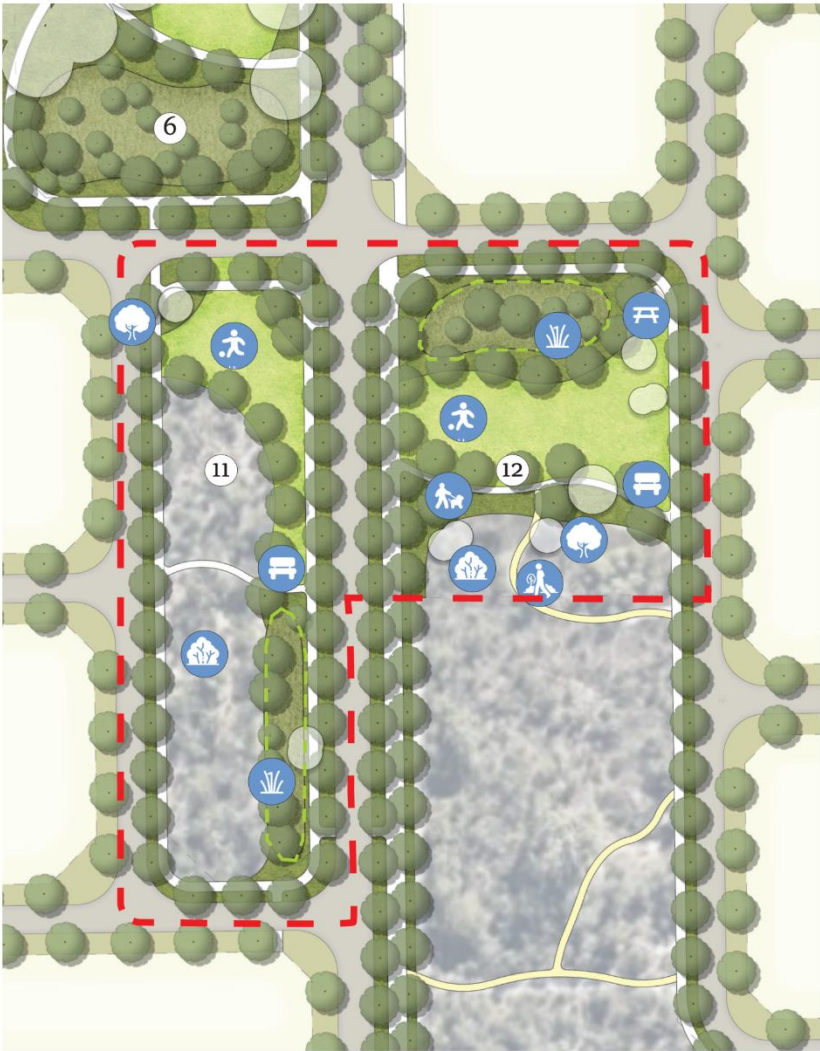
Date MAR 2024

Scale 1:500 @ A3



0 5 10 15 20 25m

05.



- Picnic Setting
- Bench Seating
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Vegetation Retention
- Retained Tree(s)
- Walking Trail

East Wanneroo Precinct 8 (Ranch Road)
POS 11 & 12 (Pocket Park)

OPEN SPACE TYPOLOGY
Pocket Park

SIZE (Excluding Road Reserve)
3,646m² - POS 11
3,679m² - POS 12

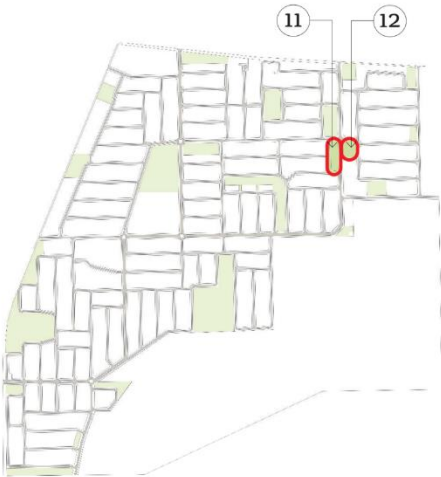
- FUNCTIONS**
Include by not limited to;
- Passive recreation function (places for relaxation & respite).
 - Shade trees with small breakout areas of irrigated turf.
 - Internal path network for bikes, scooters and connecting into the broader path network.
 - Areas for short dog walking and respite points.
 - Bench seating & Nature Play elements.
 - Stormwater drainage function.
 - Sense of Place, capturing historical and cultural character.
 - Retention of existing trees and vegetation.
 - Revegetation of native planting.
 - Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
 - Walk trails connection to adjacent Parkland.

DRAINAGE INFORMATION - POS 11
BASIN ID - B10

FIRST 15mm BASIN
Side Slopes: 1:3
Total Depth (m): 0.3
Volume (m³): 96
Top Area (m²): 353

DRAINAGE INFORMATION - POS 12
BASIN ID - B26

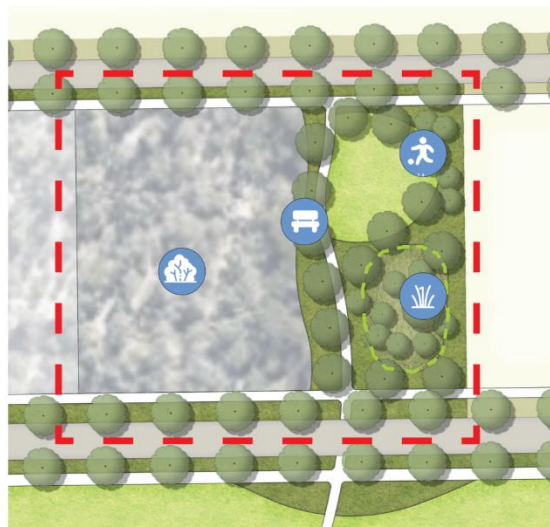
FIRST 15mm BASIN
Side Slopes: 1:3
Total Depth (m): 0.3
Volume (m³): 138
Top Area (m²): 497



Drawing Number	QPG003 : LSP : POS11_12	Revision	C
Date	MAR 2024	Scale	1:1000 @ A3

Considered Space

05.



East Wanneroo Precinct 8 (Ranch Road)

POS 14 & 16 (Pocket Park)

OPEN SPACE TYPOLOGY

Pocket Park

SIZE (Excluding Road Reserve)

4,920m² - POS 14

2,116m² - POS 16

FUNCTIONS

Include by not limited to;

- Passive recreation function (places for relaxation & respite).
- Shade trees with small breakout areas of irrigated turf.
- Internal path network for bikes, scooters and connecting into the broader path network.
- Areas for short dog walking and respite points.
- Bench seating & Nature Play elements.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees and vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.



DRAINAGE INFORMATION - POS 14

BASIN ID - B11

FIRST 15mm BASIN

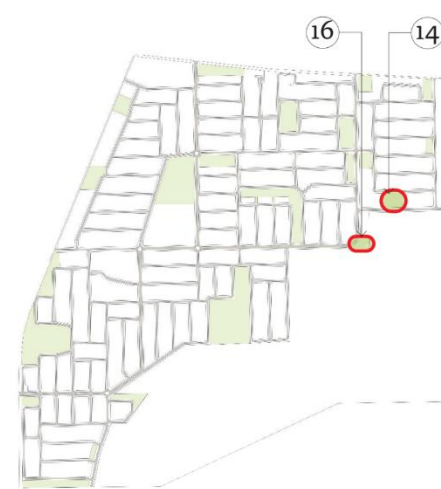
Side Slopes: 1:3
Total Depth (m): 0.3
Volume (m³): 102
Top Area (m²): 372

DRAINAGE INFORMATION - POS 16

BASIN ID - B13

FIRST 15mm BASIN

Side Slopes: 1:3
Total Depth (m): 0.3
Volume (m³): 131
Top Area (m²): 475



Drawing Number QPG003 : LSP:POS14_16

Revision C

Date MAR 2024

Scale 1:1000 @ A3



0 10 20 30 40 50m

Considered Space

05.



East Wanneroo Precinct 8 (Ranch Road) POS 19, 20 & 21 (Pocket Park)



OPEN SPACE TYPOLOGY

Pocket Park

SIZE (Excluding Road Reserve)

2,693m² - POS 19

2,693m² - POS 20

1,225m² - POS 21

FUNCTIONS

Include by not limited to;

- Passive recreation function (places for relaxation & respite).
- Shade trees with small breakout areas of irrigated turf.
- Internal path network for bikes, scooters and connecting into the broader path network.
- Areas for short dog walking and respite points.
- Bench seating & Nature Play elements.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees and vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.



DRAINAGE INFORMATION - POS 19 BASIN ID - B16

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	76
Top Area (m ²):	282

20% AEP Basin

Side Slopes:	1:6
Total Depth (m):	0.48
Volume (m ³):	328
Top Area (m ²):	1540

1% AEP Basin

Side Slopes:	1:6
Total Depth:	1.2
Volume (m ³):	1703
Top Area (m ²):	2285

DRAINAGE INFORMATION - POS 20 BASIN ID - B20

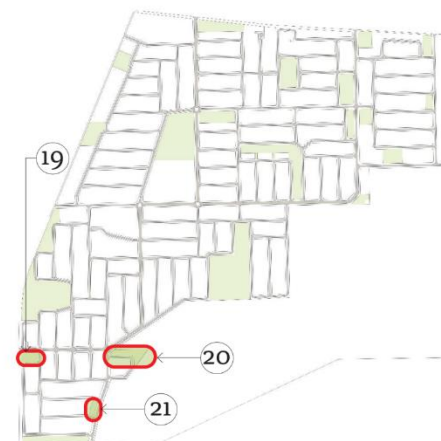
FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	459
Top Area (m ²):	1607

DRAINAGE INFORMATION - POS 21 BASIN ID - B18

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	119
Top Area (m ²):	433



Drawing Number QPG003 : LSP:POS19_20_21
Date MAR 2024

Revision C
Scale 1:1000 @ A3



0 10 20 30 40 50m

Considered Space

05.



- Shelter & Picnic Setting
- Bench Seating
- Play Space (minor)
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout

East Wanneroo Precinct 8 (Ranch Road)

POS 1 (Local Park)

OPEN SPACE TYPOLOGY

Local Park

SIZE (Excluding Road Reserve)
8,910m²

FUNCTIONS

Include by not limited to;

- Small scale recreation function with active & passive experiences.
- Shade trees with areas of irrigated turf.
- Areas for short dog walking and respite points.
- Internal path network connecting into the broader path network.
- Bench seating & shaded play space.
- Picnic setting & shelter.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access

DRAINAGE INFORMATION - POS 1

BASIN ID - B1

FIRST 15mm BASIN

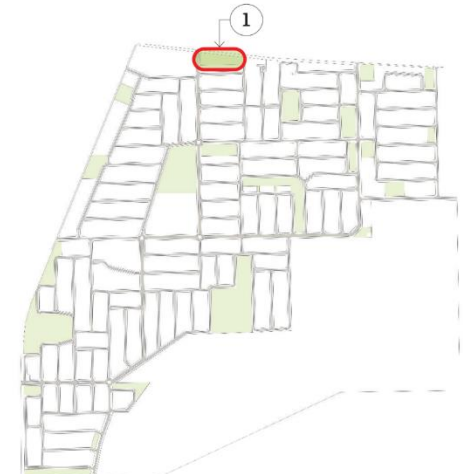
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	50
Top Area (m ²):	190

20% AEP Basin

Side Slopes:	1:6
Total Depth (m):	0.5
Volume (m ³):	190
Top Area (m ²):	830

1% AEP Basin

Side Slopes:	1:6
Total Depth:	1.2
Volume (m ³):	946
Top Area (m ²):	1354



Drawing Number QPG003 : LSP : POS1
Date MAR 2024

Revision C
Scale 1:1000 @ A3



0 10 20 30 40 50m

Considered
Space

East Wanneroo Precinct 8 (Ranch Road)

POS 5 & 8 (Local Park)

05.



DRAINAGE INFORMATION - POS 5

BASIN ID - B5

FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	86
Top Area (m2):	317

- Shelter & Picnic Setting
- Bench Seating
- Play Space (minor)
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)

OPEN SPACE TYPOLOGY

Local Park

SIZE (Excluding Road Reserve)
8,927m² - POS 5
6,786m² - POS 8

FUNCTIONS

- Include by not limited to;
- Small scale recreation function with active & passive experiences.
 - Shade trees with areas of irrigated turf.
 - Areas for short dog walking and respite points.
 - Internal path network connecting into the broader path network.
 - Bench seating & shaded play space.
 - Picnic setting & shelter.
 - Stormwater drainage function.
 - Sense of Place, capturing historical and cultural character.
 - Retention of existing trees & vegetation.
 - Revegetation of native planting.
 - Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
 - Maintenance & emergency vehicle access



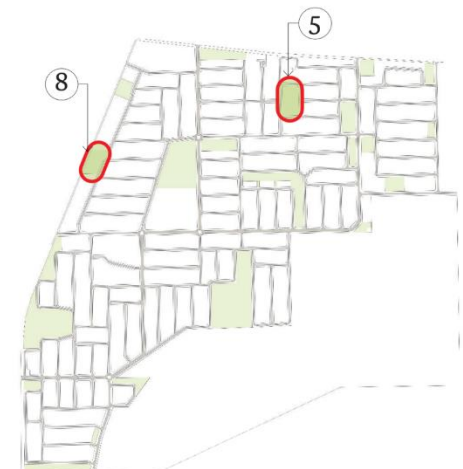
DRAINAGE INFORMATION - POS 8

BASIN ID - B29

FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	234
Top Area (m2):	829

20% AEP Basin	
Side Slopes:	1:6
Total Depth (m):	0.39
Volume (m3):	141
Top Area (m2):	3390

1% AEP Basin	
Side Slopes:	1:6
Total Depth:	1.2
Volume (m3):	3747
Top Area (m2):	4597



Drawing Number QPG003 : LSP:POSS_8
Date MAR 2024

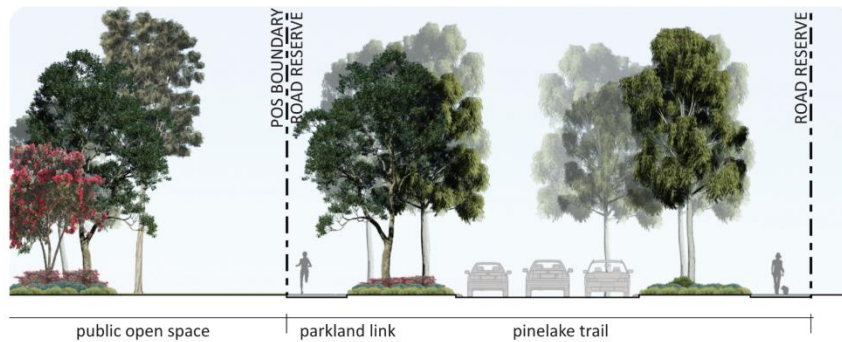
Revision C
Scale 1:1000 @ A3



0 10 20 30 40 50m

Considered Space

05.



- Shelter & Picnic Setting
- Bench Seating
- Play Space (minor)
- Nature Play
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)
- Parkland Link

East Wanneroo Precinct 8 (Ranch Road)

POS 6 (Local Park)

OPEN SPACE TYPOLOGY

Local Park

SIZE (Excluding Road Reserve)
7,538m²

FUNCTIONS

Include by not limited to;

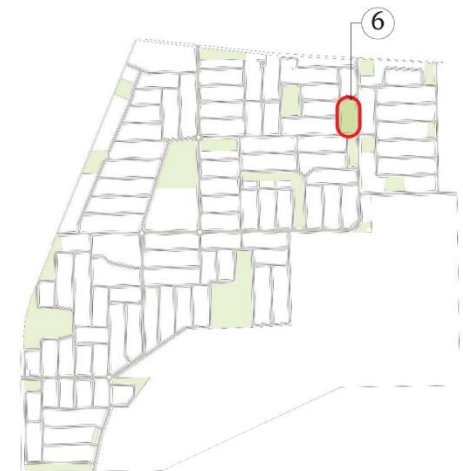
- Small scale recreation function with active & passive experiences.
- Shade trees with areas of irrigated turf.
- Areas for short dog walking and respite points.
- Internal path network connecting into the broader path network.
- Bench seating & shaded play space.
- Picnic setting & shelter.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access

DRAINAGE INFORMATION - POS 6

BASIN ID - B6

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	268
Top Area (m ²):	949



Drawing Number QPG003 : LSP:POS6
Date MAR 2024

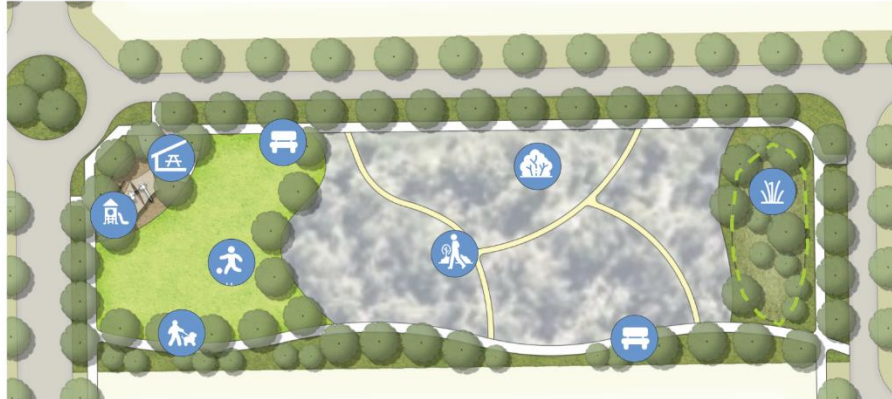
Revision C
Scale 1:1000 @ A3



0 10 20 30 40 50m

East Wanneroo Precinct 8 (Ranch Road) POS 10 & 22 (Local Park)

05.



DRAINAGE INFORMATION - POS 10
BASIN ID - B7

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	131
Top Area (m2):	475

- Shelter & Picnic Setting
- Bench Seating
- Play Space (minor)
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)
- Vegetation Retention
- Walking Trail

OPEN SPACE TYPOLOGY

Local Park

SIZE (Excluding Road Reserve)

7,559m² - POS 10

8,902m² - POS 22

FUNCTIONS

Include by not limited to;

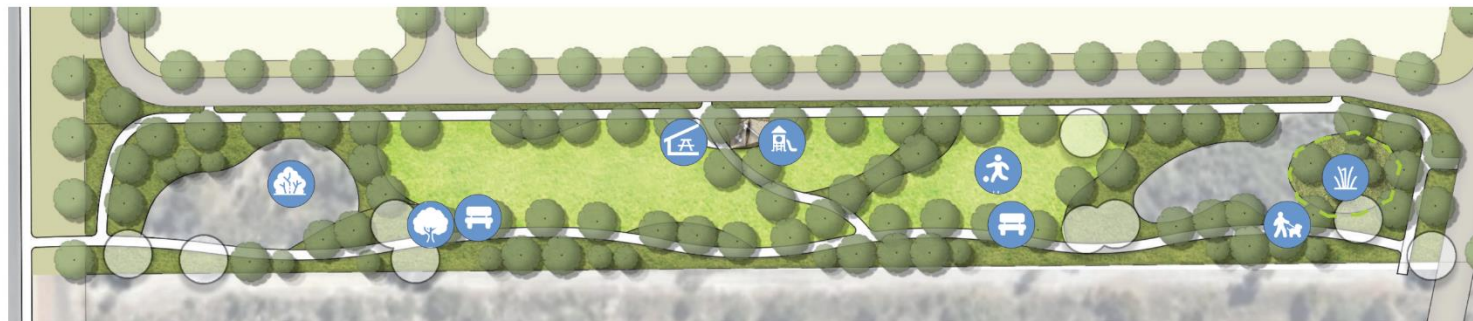
- Small scale recreation function with active & passive experiences.
- Shade trees with areas of irrigated turf.
- Areas for short dog walking and respite points.
- Internal path network connecting into the broader path network.
- Bench seating & shaded play space.
- Picnic setting & shelter.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access.
- Walk trails connection to adjacent path network.

DRAINAGE INFORMATION - POS 22

BASIN ID - B19

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	76
Top Area (m2):	282



Drawing Number QPG003 : LSP:POS10_22

Date MAR 2024

Revision C

Scale 1:1000 @ A3



0 10 20 30 40 50m

Considered Space

05.



East Wanneroo Precinct 8 (Ranch Road)

POS 15 (Local Park)

- Shelter & Picnic Setting
- Bench Seating
- Play Space (minor)
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)
- Vegetation Retention
- Walking Trail

OPEN SPACE TYPOLOGY

Local Park

SIZE (Excluding Road Reserve)
5,958m²

FUNCTIONS

Include by not limited to;

- Small scale recreation function with active & passive experiences.
- Shade trees with areas of irrigated turf.
- Areas for short dog walking and respite points.
- Internal path network connecting into the broader path network.
- Bench seating & shaded play space.
- Picnic setting & shelter.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access

DRAINAGE INFORMATION - POS 15

BASIN ID - B24

FIRST 15mm BASIN

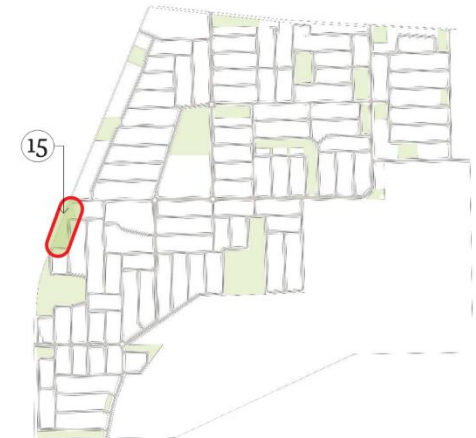
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	201
Top Area (m ²):	718

20% AEP Basin

Side Slopes:	1:6
Total Depth (m):	0.47
Volume (m ³):	1114
Top Area (m ²):	5920

1% AEP Basin

Side Slopes:	1:6
Total Depth:	1.2
Volume (m ³):	6028
Top Area (m ²):	7362



Considered Space

Drawing Number QPG003 : LSP : POS15

Revision C

Date MAR 2024

Scale 1:1000 @ A3



0 10 20 30 40 50m

05.



East Wanneroo Precinct 8 (Ranch Road)

POS 9 (Neighbourhood Park)

- Shelter & Picnic Settings
- Bench Seating
- Play Space (major)
- Retained Tree(s)
- Drainage Basin
- Multipurpose Sports Oval
- BBQ
- Fitness Node
- Drinking Fountain

OPEN SPACE TYPOLOGY

Neighbourhood Park

SIZE (Excluding Road Reserve)
28,020m²

FUNCTIONS

Include by not limited to;

- Medium scale recreation function with active & passive experiences.
- Potential to incorporate accessible remnant bushland and conservation areas.
- Potential to provide recreational, sports and nature area functions.
- Shade trees with areas of irrigated turf.
- Internal path network connecting into the external pedestrian and cycle path network.
- Multiple seating, picnic settings and shelter opportunities.
- Furniture to include bins, drink fountains, BBQ facilities & lighting.
- Medium to large shaded play space with universal access equipment.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access.
- Fitness Node.

DRAINAGE INFORMATION - POS 9

BASIN ID - B8

FIRST 15mm BASIN

Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m ³):	107
Top Area (m ²):	392



Considered
Space

Drawing Number QPG003 : LSP:POS9
Date MAR 2024

Revision C
Scale 1:1000 @ A3



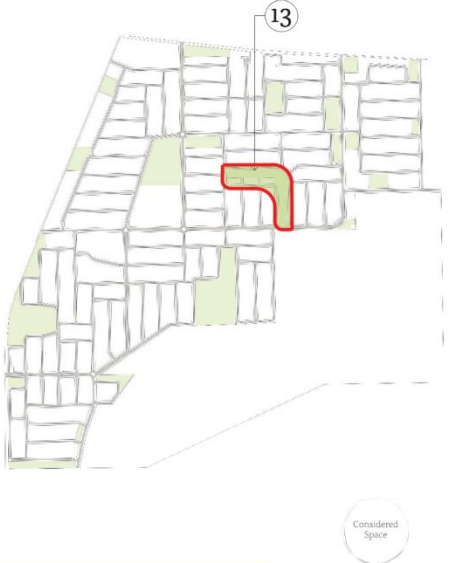
0 10 20 30 40 50m

East Wanneroo Precinct 8 (Ranch Road)
POS 13 (Neighbourhood Park)

05.



- Shelter & Picnic Setting
- Bench Seating
- Play Space (major)
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)
- Vegetation Retention
- Educational Signage
- BBQ
- Drinking Fountain



Drawing Number	QPG003 : LSP : POS13	Revision	C
Date	MAR 2024	Scale	1:1000 @ A3

05.



East Wanneroo Precinct 8 (Ranch Road) POS 17 (Neighbourhood Park)

- Shelter & Picnic Setting
- Bench Seating
- Play Space (major)
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Vegetation Retention
- BBQ
- Drinking Fountain

OPEN SPACE TYPOLOGY

Neighbourhood Park

SIZE (Excluding Road Reserve)
40,562m²

FUNCTIONS

- Include by not limited to;
- Medium scale recreation function with active & passive experiences.
 - Potential to incorporate accessible remnant bushland and conservation areas.
 - Potential to provide recreational, sports and nature area functions.
 - Shade trees with areas of irrigated turf.
 - Internal path network connecting into the external pedestrian and cycle path network.
 - Multiple seating, picnic settings and shelter opportunities.
 - Furniture to include bins, drink fountains, BBQ facilities & lighting.
 - Medium to large shaded play space with universal access equipment.
 - Stormwater drainage function.
 - Sense of Place, capturing historical and cultural character.
 - Retention of existing trees & vegetation.
 - Revegetation of native planting.
 - Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
 - Maintenance & emergency vehicle access.

DRAINAGE INFORMATION - POS 17

BASIN ID - B21	
FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	268
Top Area (m2):	949
BASIN ID - B22	
FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	155
Top Area (m2):	562
BASIN ID - B27	
FIRST 15mm BASIN	
Side Slopes:	1:3
Total Depth (m):	0.3
Volume (m3):	34
Top Area (m2):	134



Drawing Number	QPG003 : LSP :POS17	Revision	C
Date	MAR 2024	Scale	1:2000 @ A3

0 20 40 60 80 100m

05.

East Wanneroo Precinct 8 (Ranch Road)
POS 18 (Neighbourhood Park)



- Shelter & Picnic Setting
- BBQ
- Drinking Fountain
- Vegetation Retention
- Walking Trail
- Educational Signage
- Bench Seating
- Dog Walking
- Drainage Basin
- Passive Kickabout
- Retained Tree(s)

DRAINAGE INFORMATION - POS 18

BASIN ID - B14		BASIN ID - B17	
1% AEP Basin		FIRST 15mm BASIN	
Side Slopes:	-	Side Slopes:	1:3
Total Depth:	0.39	Total Depth (m):	0.3
Volume (m3):	2565	Volume (m3):	76
Top Area (m2):	7000	Top Area (m2):	282
BASIN ID - B15		20% AEP Basin	
FIRST 15mm BASIN		Side Slopes:	1:6
Side Slopes:	1:3	Total Depth (m):	0.6
Total Depth (m):	0.3	Volume (m3):	380
Volume (m3):	67	Top Area (m2):	1129
Top Area (m2):	250		
20% AEP Basin			
Side Slopes:	1:6		
Total Depth (m):	0.6		
Volume (m3):	334		
Top Area (m2):	999		



OPEN SPACE TYPOLOGY

Neighbourhood Park

SIZE (Excluding Road Reserve)

40,562m2

FUNCTIONS

Include by not limited to;

- Medium scale recreation function with active & passive experiences.
- Potential to incorporate accessible remnant bushland and conservation areas.
- Potential to provide recreational, sports and nature area functions.
- Shade trees with areas of irrigated turf.
- Internal path network connecting into the external pedestrian and cycle path network.
- Multiple seating, picnic settings and shelter opportunities.
- Furniture to include bins, drink fountains, BBQ facilities & lighting.
- Stormwater drainage function.
- Sense of Place, capturing historical and cultural character.
- Retention of existing trees & vegetation.
- Revegetation of native planting.
- Waterwise native planting with planting design to be hydrozoned according to irrigation requirements.
- Maintenance & emergency vehicle access.
- Walk trails connection to adjacent path network.

Drawing Number	QPG003 : LSP :POS18	Revision	C
Date	MAR 2024	Scale	1:2000 @ A3



0 20 40 60 80 100m

Considered Space

East Wanneroo Precinct 8 (Ranch Road) Park A, B & C (Parkland)

05.



OPEN SPACE TYPOLOGY

Parkland

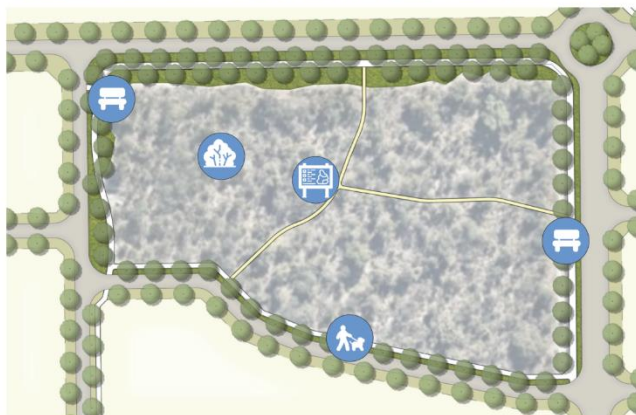
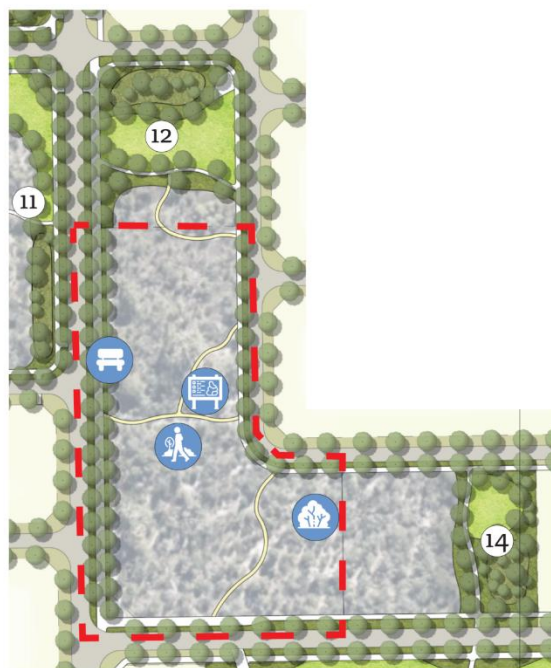
SIZE (Excluding Road Reserve)

30,100m² - PARK A21,300m² - PARK B11,700m² - PARK C

FUNCTIONS

Include by not limited to;

- Accessible areas of remnant bushland and conservation areas.
- Internal circulation paths & walk trails linking with external pedestrian and cycle paths.
- Sense of Place, capturing historical and cultural character including ecological and cultural links.
- Educational signage.
- Retention of existing trees & vegetation.
- Opportunity to restore and enhance biodiversity via weed removal and revegetation
- Access for maintenance, service and emergency vehicles.
- Opportunity for complementary landscaping including areas of native revegetation, water wise garden bed and tree planting.
- Informal seating & picnic settings opportunities.
- Walk trails connection to adjacent path network.



Drawing Number QPG003 : LSP :PARK A,B,C

Revision C

Date MAR 2024

Scale 1:2000 @ A3



0 20 40 60 80 100m



05.

East Wanneroo Precinct 8 (Ranch Road)

Lake Mariginiup & Little Lake Mariginiup (Parkland)

**OPEN SPACE TYPOLOGY**

Parkland

SIZE (Including Mariginiup Lake and Little Mariginiup Lake)
87.5731 ha

FUNCTIONS

Include by not limited to;

- Accessible areas of remnant bushland and conservation areas.
- Internal circulation paths, boardwalks & walk trails linking with external pedestrian and cycle paths.
- Parkland Link provides an interconnected pedestrian and cycle path network between Lake Mariginiup, Little Lake Mariginiup and Adams Lake to the north.
- Sense of Place, capturing historical and cultural character including ecological and cultural links.
- Educational signage.
- Retention of existing trees & vegetation.
- Opportunity to restore and enhance biodiversity via weed removal and revegetation
- Access for maintenance, service and emergency vehicles.
- Opportunity for complementary landscaping including areas of native revegetation, water wise garden bed and tree planting.
- Informal seating & picnic settings opportunities.
- Walk trails connection to adjacent path network.
- Fitness Nodes.



Drawing Number QPG003 : LSP :MAR
Date MAR 2024

Revision C
Scale 1:2500 @ A3



0 25 50 75 100 125m



06. Streetscapes

Streetscapes

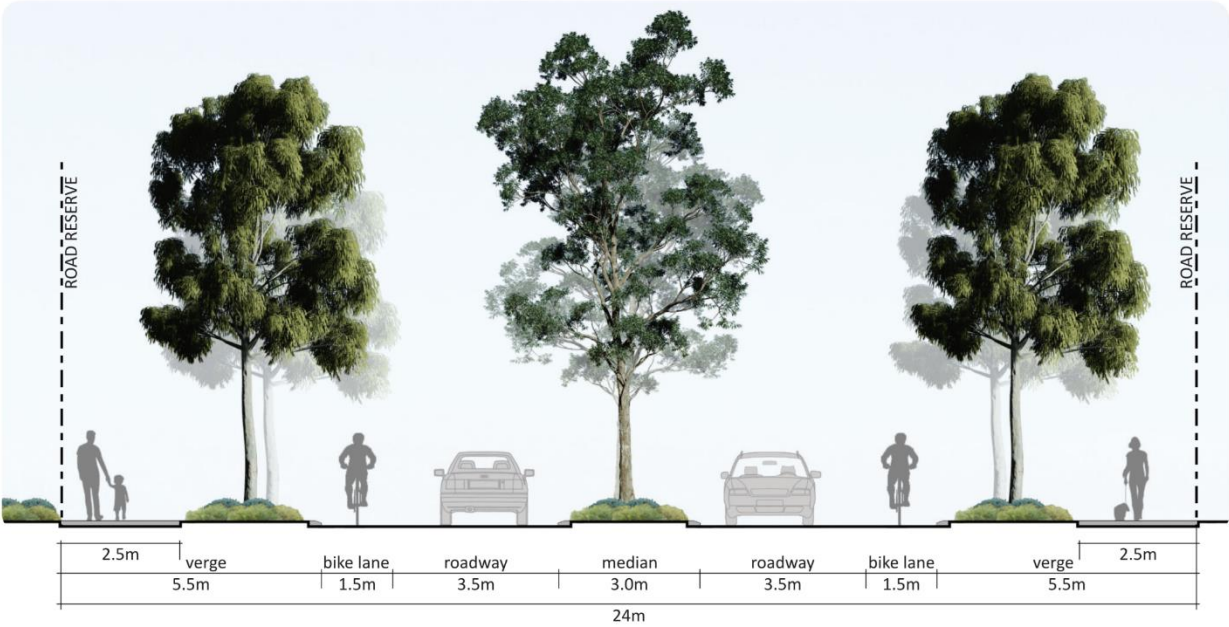
The street will become the principal means of integration for activities within the Ranch Road precinct, with street design of primary importance for place making and the activation of land use across the precinct and greater East Wanneroo. It will be responsive to existing vegetation, topography, function and cater appropriately for pedestrians and cyclist and in doing so, providing an equitable balance between pedestrians, private vehicles, and public transport in a safe and efficient manner.

Internal streets throughout the precinct will have a suburban neighbourhood character with appealing, highly integrated pedestrian pavements, seating, lighting, interpretive & educational information and where possible an established, continuous tree canopy.

Streetscapes throughout the development shall incorporate a variety of treatments in response to the road hierarchy system. In all cases, landscape works shall incorporate tree planting in accordance with the accepted traffic standards and the City of Wanneroo’s East Wanneroo Street Tree Guidelines. Treatments may include soft works such as street trees, smaller shrubs and groundcovers. It is envisaged that the stormwater runoff from residential roads will be contained within a system of bio-retention basins distributed along road reserves and the public open space network.

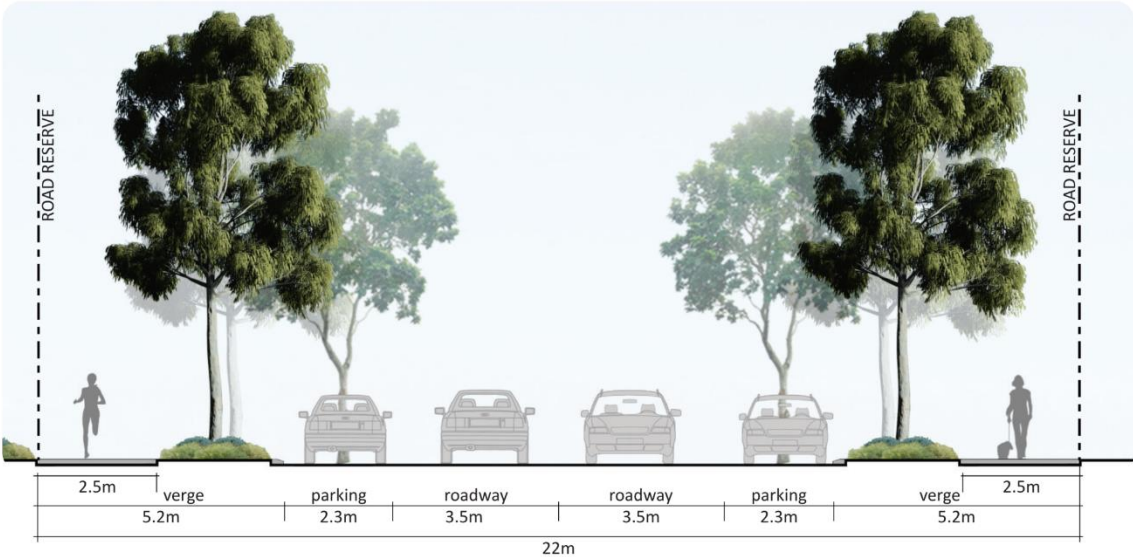
Tree, shrub and groundcover species used throughout the streetscapes will predominantly be native species. It is proposed that species selection for streetscapes will also include species which reference the historic and cultural influences in the area and as outlined in the East Wanneroo District Structure Plan Street Tree Schedule. Deciduous exotic species historically used around homesteads may be used throughout the precinct.

The below cross-sections are indicative only and will be subject to further detailed design at the subdivision stage.

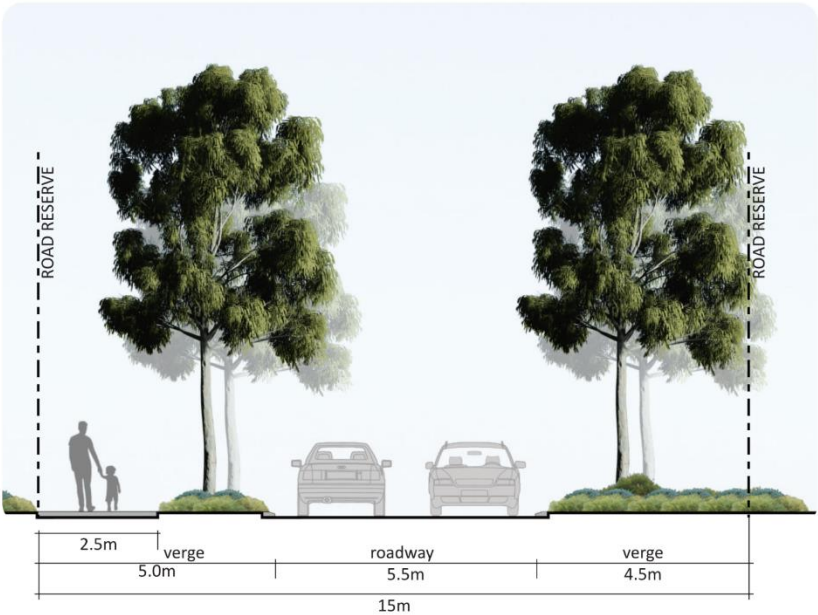


NEIGHBOURHOOD CONNECTOR A (24m)



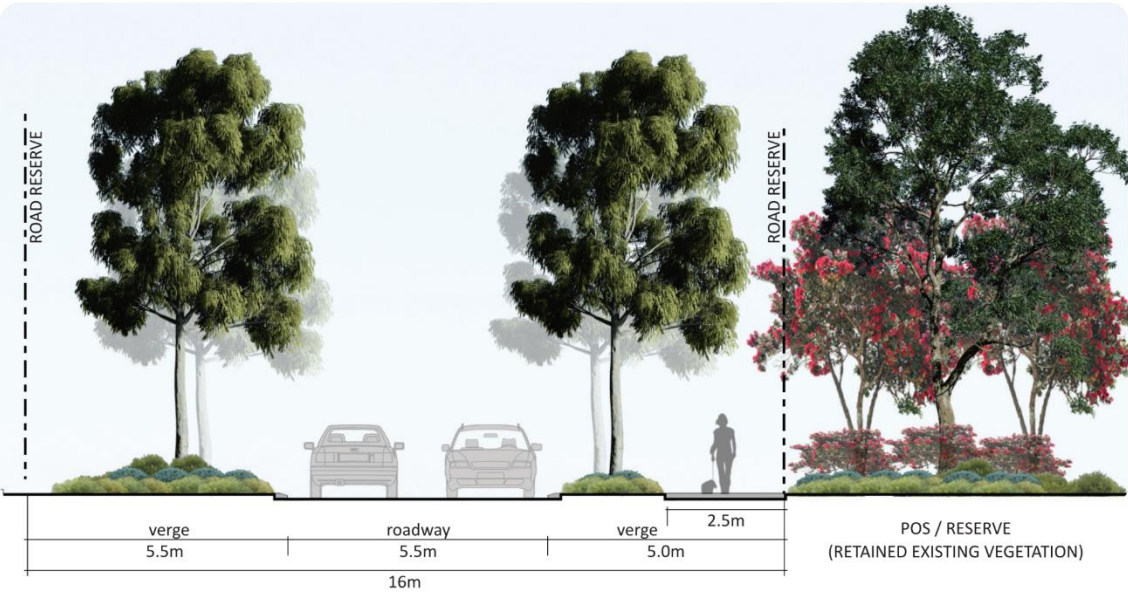


NEIGHBOURHOOD CONNECTOR B

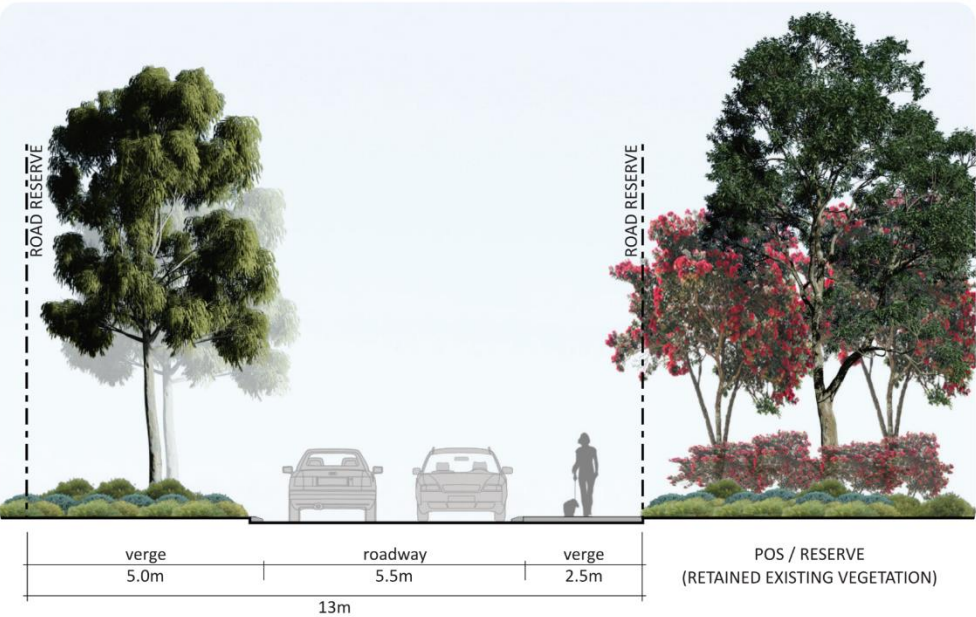


ACCESS STREET C/D (15m)





ACCESS STREET C/D (16m)



ACCESS STREET C/D (13m)



07. Softscape Planting

Plant Species

POS & Street Trees

(Indicative Species)

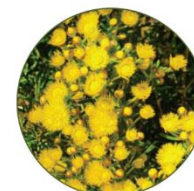
- *Agonis flexuosa*
- *Allocasuarina fraseriana*
- *Bauhinia blakeana*
- *Callistemon citrinus*
- *Callistemon viminalis*
- *Corymbia callophylla*
- *Corymbia ficifolia*
- *Cupaniopsis anacardioides*
- *Delonix regia*
- *Erythrina sykesii*
- *Eucalyptus drummondii*
- *Eucalyptus erythrocorys*
- *Eucalyptus erythronema*
- *Eucalyptus forrestiana*
- *Eucalyptus gomphocephala*
- *Eucalyptus lehmannii*
- *Eucalyptus todtiana*
- *Eucalyptus torquata*
- *Eucalyptus torwood*
- *Eucalyptus utilis*
- *Eucalyptus victrix*
- *Eucalyptus woodwardii*
- *Jacaranda mimosifolia*
- *Melaleuca lanceolata*
- *Xanthorrhoea preissii*



Shrubs

(Indicative Species)

- *Banksia ashbyi* dwarf
- *Banksia attenuata*
- *Banksia hookeriana*
- *Beaufortia aestiva*
- *Calothamnus hirsutus*
- *Conostylis candicans*
- *Dianella revoluta*
- *Eremophila nivea*
- *Grevillea preissii*
- *Hakea lissocarpa*
- *Hibbertia* spp
- *Hypocalymma robustum*
- *Kunzea baxteri*
- *Leucophyta brownii*
- *Lomandra longifolia*
- *Lomandra tanika*
- *Melaleuca conothamnoides*
- *Melaleuca huegelii*
- *Melaleuca incana* (Little form)
- *Melaleuca seriata*
- *Pimelea ferruginea*
- *Scaevola nitida*
- *Thryptomene baeckeacea*
- *Westringia dampieri*



Plant Species (cont.)

Groundcovers

(Indicative Species)

- Acacia saligna (prostrate)
- Carpobrotus virescens
- Eremophila glabra (prostrate)
- Grevillea 'Gin Gin Gem'
- Grevillea thelemanniana
- Grevillea crithmifolia (prostrate)
- Hemiantra pungens
- Hibbertia spp
- Kennedia prostrata
- Myoporum parvifolium



Sedge & Rushes

(Indicative Species)

- Baumea articulata
- Baumea juncea
- Carex appressa
- Ficinia nodosa
- Juncus subsecundus
- Lepidosperma gladiatum
- Lomandra maritima



Revegetation

(Indicative Species)

- Adenanthos cygnorum
- Agonis flexuosa
- Alexgeorgea nitens
- Allocasuarina fraseriana
- Banksia attenuata
- Banksia ilicifolia
- Banksia menziesii
- Calytrix fraseri
- Desmocladius flexuosus
- Eucalyptus marginata
- Eucalyptus rudis
- Hibbertia hypericoides
- Jacksonia furcellata
- Jacksonia sternbergiana
- Kunzea glabrescens
- Lechenaultia floribunda
- Melaleuca preissiana
- Mesomelaena pseudostygia
- Verticordia densiflora
- Xanthorrhoea preissii





Attachment 1

Environmental Assessment Report



EAST WANNEROO PRECINCT 8

ENVIRONMENTAL ASSESSMENT REPORT

Prepared for: Qube
Report Date: 15 February 2024
Version: 2
Report No. 2023-754

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ENVIRONMENTAL

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1 INTRODUCTION

1.1 Site Location

The East Wanneroo Precinct 8 Structure Plan has been developed to guide urban development in the Precinct from rural and semi-rural properties to urban development. The area is located in the City of Wanneroo, approximately 20km north of Perth (Figure 1).

The site is generally bound by Coogee Road to the north, Pinjar Road and Mornington Drive to the west, Pinelake Trail and rural land to the east and Mariginiup Lake to the south. The site is zoned Urban, Parks and Recreation and contains part of Bush Forever Site 147 'Mariginiup Lake and Adjacent Bushland, Mariginiup'.

1.2 Background

Planning for East Wanneroo has been undertaken over a number of years. The Western Australian Planning Commission (WAPC) released the East Wanneroo Structure Plan (Appendix 1) and accompanying report in January 2011. Precinct 8 is located in the north-west corner of the Structure Plan area with a significant portion identified as suitable for potential urban development. The site has been recognised in the WAPC *Directions 2031 and Beyond* and the draft *Outer Metropolitan Perth and Peel Sub-Regional Strategy* as an "Urban Expansion Area 2011-15".

The East Wanneroo District Structure Plan guides the progressive urbanisation of East Wanneroo in response to the proposals set out in the North-West Sub-regional Planning Framework 2018. The Western Australian Planning Commission (WAPC) released the final East Wanneroo District Structure Plan (EWDSP) and accompanying report in August 2021 (DPLH, 2021). Precinct 8 is located in the central western part of the Structure Plan and has been identified as suitable for potential urban development (Plate 1).

Plate 1: East Wanneroo District Structure Plan (DPLH, 2021)





The District Structure Plan identifies areas of bushland to be retained as Parkland, denoted in green, and Parklands Subject to Confirmation, denoted by green stripes. Other areas of native vegetation that occur within the site were not identified as areas for potential protection. There is also an ecological linkage identified in the Structure Plan that runs north-south denoted by solid dark green circles.

A Concept Structure Plan for Precinct 8 has been prepared by Rowe Group Design (Appendix 1).

1.3 Scope of Works

The Environmental Assessment Report has been undertaken to assess the environmental impact of the proposed Structure Plan for Precinct 8. The report includes:

- Historical land uses and disturbances using historical aerial photography and Contaminated Sites Database search;
- Aboriginal and cultural heritage;
- Physical Characteristics of the site including:
 - Landform;
 - Drainage and wetlands; and
 - Geological and soil mapping;
- Flora and Vegetation;
- Fauna, including Black Cockatoo Habitat Assessment
- Environmental policy areas and implications on the proposed development;
- Information on regulatory requirements such as the referral of the project to any State or Commonwealth authorities;
- An assessment of the environmental impact of the LSP; and
- Recommendations for any additional environmental work to be undertaken at subdivision stages.

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2 LEGISLATION, POLICY AND GUIDELINES

The following legislation, policy and guidelines have been considered during this environmental assessment and will guide the required and expected management outcomes from Commonwealth, State and Local government agencies.

2.1 State Legislation

2.1.1 Zoning

The site is currently zoned 'Urban Deferred' in the Metropolitan Region Scheme (MRS) (National Map, 2022) and 'Rural Resource' under the City of Wanneroo District Planning Scheme 2 (WAPC, 2001).

2.1.2 Environmental Protection Act 1986

Planning schemes together with their amendments are required to be referred to the Environmental Protection Authority (EPA) by the responsible authority for a decision by the EPA on whether to assess them under the formal environmental impact assessment (EIA) process.

Under the EP Act, clearing of native vegetation requires a permit from DWER unless there is an exemption under Schedule 6 of the EP Act or Items under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Proposals that require clearing in accordance with an approved subdivision are exempt under Schedule 6 of the EP Act.

It is likely that any clearing that will be required for the development will be considered at the subdivision stage by DWER and is likely to be exempt from the requirements of a clearing permit.

2.1.3 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) protects all native species and threatened ecological communities. The BC Act recognises that activities involving the taking of flora or fauna (other than threatened species) and the disturbing of fauna (including threatened species) that are approved under the EP Act do not require further approval under the BC Act, if they are undertaken in accordance with any biodiversity conservation conditions that are applied to an authorisation. These activities include clearing of native vegetation done in accordance with an implementation decision under Part IV of the EP Act.

2.2 State Policy and Guidance

2.2.1 State Planning Policy No. 2.8 Bushland Policy for the Perth Metropolitan Region

SPP 2.8 in conjunction with Bush Forever (Government of Western Australia, 2000) seeks to ensure the protection of at least 10 per cent of the original extent of each vegetation complex within the Perth Metropolitan Region. SPP 2.8 was developed to ensure that bushland protection and management issues were appropriately addressed and integrated as a part of future land use. Bush Forever identified approximately 51,200 hectares of regionally significant vegetation for retention. The management of these areas include reservation and acquisition by the State government, negotiated planning solutions with owners who are seeking urban and/or industrial development and advice, assistance and incentive programs to support private conservation.

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The northern part of Bush Forever Site 147 'Mariginiup Lake and Adjacent Bushland, Mariginiup' forms part of the Structure Plan Area.

2.2.2 State Planning Policy No. 2.9 Water Resources

SPP 2.9 aims to ensure the protection and appropriate management of water resources in line with state guidelines is included within the planning framework. The broad aims of this policy are to:

- Protect, conserve and enhance water resources.
- Assist in ensuring the availability of suitable water resources to maintain essential requirements for human and other biological life and to maintain or improve the quality and quantity of water resources.
- Promote and assist in the management and sustainable use of water resources.

As a part of implementing this policy, the Better Urban Water Management (WAPC 2008) framework was developed. This framework provides detail on how water resources should be considered at each stage of planning by identifying the various actions and investigations required with regard to regional and local planning strategies, town planning schemes, structure plans, subdivisions, strata subdivision and development applications (WAPC 2008).

The site is located to the west of the Gngara Urban Water Protection Conservation Area.

2.2.3 State Planning Policy No. 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning

SPP 5.4 addresses transport noise from within major transport corridors, including freight routes, and its impact on noise sensitive land uses. The policy aims to:

- Protect people from unreasonable levels of transport noise by establishing a standardised set of criteria to be used in the assessment of proposals.
- Protect major transport corridors and freight operations from incompatible urban encroachment.
- Encourage best-practice design and construction standards for new development proposals and new or redeveloped transport infrastructure proposals.
- Facilitate the development and operation of an efficient freight network.
- Facilitate the strategic co-location of freight handling facilities.

Major transport (road) corridors are defined as:

- State roads and national highways;
- Urban primary distributors as described on the metropolitan functional road hierarchy (MRWA, local government) network;
- Other urban roads carrying more than 20,000 vehicles per day;
- Primary freight roads (Perth metropolitan region);
- Primary freight roads (South-West region); and
- Primary freight roads (State-wide).

Currently there is only one regional road (Pinjar) Road adjacent to the western boundary of the site. The East Wanneroo District Structure Plan recognises that the area will require an upgraded internal



regional road network together with improved north south and east west links. The Structure Plan Area may be impacted by the upgrade and extension of Ranch Road and there is the potential for noise attenuation to be required. The exact nature of these measures will be determined at the detailed planning stage through negotiations with Main Roads Western Australia (MRWA). Noise reduction strategies will be designed and implemented in conjunction with local government recommendations and government agency guidelines. Where practicable, management measures will be incorporated into the future development to minimise the impacts of noise and will be subject to subdivision and development approval conditions.

2.2.4 Environmental Protection Authority Guidance Statement No 33 Environmental Guidance for Planning and Development (EPA 2009)

The purpose of EPA Guidance Statement No.33 Environmental Guidance for Planning and Development is to outline the significance of environmental factors and provide the key definitions associated with the environmental factors. This document is primarily targeted at ensuring environmental factors are considered in line with the EPA's principals and objectives and within the planning framework. In particular, EPA Guidance Statement No.33 Environmental Guidance for Planning and Development aims to:

- Provide an overview to environmental protection processes and information;
- Describe the referral and environmental impact assessment process and process under Part IV of the EP Act; and
- Provide the EPA's position and advice on a range of environmental factors, outlining how to protect, conserve and enhance the environmental values.

2.2.5 Draft Gngara Sustainability Strategy

The Gngara Sustainability Study (GSS), released for public comment in July 2009, considers the impact of declining ground water resources in the Gngara Mound and the associated implications for land use. The GSS presents a holistic government approach to the ongoing viability of the mound and the systems it supports. The GSS aims to achieve a water and land management framework for the Gngara ground water system that is socially acceptable, economically viable and environmentally protective.

The major recommendations of the GSS relate to minimising impacts on wetland and terrestrial ecosystems through land management practices and reducing ground water abstraction. The GSS favours additional urbanisation occurring on land already disturbed, including portions of East Wanneroo and the fringes of State Forest, as opposed to clearing remaining natural vegetation. The strategy also outlines the importance of linkages between bushland areas to increase resilience to falling ground water levels and climate change.

The site is within the GSS study area but is outside of the priority drinking water resource areas (DWER, 2023c). The GSS land use concept is generally in keeping with that identified in the Future of East Wanneroo study, providing for urbanisation of portions of East Wanneroo while retaining a rural interface to the east of the Structure Plan Area.

2.2.6 Position Statement: Wetlands (WRC, 2001)

This position statement was prepared to clarify the Commission's position on the management and protection of wetlands of the Swan Coastal Plain and how this relates to development in the region.



It provides information relating to wetland type, evaluation and management based on the systems developed by the Semeniuk Research Group for wetland classification on the Swan Coastal plain (Hill *et al.*, 1996). It also discusses wetland buffers and land use with recommendations for buffer widths depending on the purpose of the buffer and the surrounding land use.

2.2.7 Position Statement 4; Environmental Protection of Wetlands (EPA, 2004)

Position Statement 4 defines important values and functions of wetlands and establishes principles for the environmental protection of wetlands in general (EPA 2004).

The Position Statement provides a set of principles for the protection of wetlands to be used by natural resource managers, landowners and managers when addressing wetland impacts and management.

2.3 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's central piece of environmental legislation.

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the Act as matters of national environmental significance.

The seven matters of national environmental significance to which the EPBC Act applies are:

- World heritage sites
- National heritage places
- Wetlands of international importance (often called 'ramsar' wetlands after the international treaty under which such wetlands are listed)
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- Nuclear actions.

Under the EPBC Act, a significant impact is determined by the sensitivity, value and quality of the environment which is to be impacted and the intensity, duration, magnitude and geographic extent of the impacts (DEWHA, 2008b). If a proposed action is deemed to have a significant impact, this action should be referred to the Minister.

The EPBC Act applies to 'actions' which:

- Have a 'significant impact' on 'matters of national environmental significance';
- Are undertaken by commonwealth government agencies and have a significant impact on the environment anywhere in the world; or
- Are undertaken by any person and have a significant impact on commonwealth land (even if the activity is not actually carried out on the commonwealth land).

The Matters of National Environmental Significance. Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999 (DSEWPac, 2009) provides a guide for determining



the significance of the impact which depends on the sensitivity, value and quality of the environment and the intensity, duration, magnitude and geographic extent of the impacts.

3 EXISTING ENVIRONMENT

3.1 Land Use

3.1.1 Historic Land Use

Earliest available aerial photography for the site from 1965 shows that the site contains a large amount of uncleared vegetation and some lots completely cleared (Plate 2) (Landgate, 2023). Water is observable in Mariginiup Lake as well as Little Mariginiup Lake located to the north-east of Mariginiup Lake.

Plate 2: Historical Aerial Photograph from 1965



Source: Landgate, 2023

The 1983 aerial photograph shows additional clearing and rural development has started on some of the lots (Landgate, 2023). Little Mariginiup Lake appears to be much drier and is likely to have been drained into Lake Mariginiup from the south-western corner and is completely cleared (Plate 3). One lot in the north-eastern corner of the precinct has been planted with pine trees (Landgate, 2023).

Plate 3: Historical Aerial Photograph from 1983



Source: Landgate, 2023

Further clearing is evident from the photograph taken in 1995 and many of the lots in the precinct have been developed for market gardening and a chicken farm (Plate 4) (Landgate, 2023).

Plate 4: Historical Aerial Photograph from 1995



Source: Landgate, 2023



3.1.2 Current Land Use

The Structure Plan area contains a number of different lands uses including market gardens and large lifestyle blocks. Table 1 shows the status of land use on each lot.

Table 1: Presence of Native Vegetation in each Lot

Lot	Vegetated/Cleared
Lot 3 Mornington Drive	Cleared – market garden
Lot 4 Mornington Drive	Cleared – market garden
Lot 3 Coogee Road	Partly vegetated with cleared paddock
Lot 4 Coogee Road	Partly vegetated with cleared area
Lot 5 Coogee Road	Vegetated
Lot 6 Coogee Road	Partly vegetated with cleared area
Lot 7 Coogee Road	Partly vegetated and remainder cleared for market gardens
Lot 20 Coogee Road	Cleared – structures
Lot 23 Coogee Road	Cleared – paddock and partly vegetated
Lot 24 Coogee Road	Parkland cleared area and remainder cleared
Lot 101 Coogee Road	Cleared – market garden
Lot 102 Coogee Road	Cleared – market garden
Lot 21 Pinelake Trail	Cleared – pine plantation and artificial lake
Lot 802 Mariginiup Road	Mostly cleared containing Little Mariginiup Lake
Lot 1 Ranch Road	Cleared – market gardens
Lot 2 Ranch Road	Vegetated
Lot 3 Ranch Road	Cleared – market gardens
Lot 4 Ranch Road	Cleared – market gardens
Lot 5 Ranch Road	Partly vegetated with cleared areas
Lot 6 Ranch Road	Partly vegetated with cleared areas
Lot 7 Ranch Road	Cleared – market gardens
Lot 8 Ranch Road	Mostly vegetated with cleared areas
Lot 10 Ranch Road	Vegetated with cleared area on western boundary
Lot 11 Ranch Road	Partly vegetated with market gardens
Lot 19 Ranch Road	Parkland cleared
Lot 22 Ranch Road	Mostly vegetated with cleared areas
Lot 100 Ranch Road	Partly vegetated with cleared areas
Lot 250 Ranch Road	Partly vegetated mostly cleared – market gardens
Lot 251 Ranch Road	Mostly vegetated with cleared areas
Lot 801 Ranch Road	Cleared with planted exotics
Lot 1 Pinjar Road	Cleared – market gardens
Lot 11142 Ranch Road	Vegetated – lake and buffer
Lot 14328 Ranch Road	Lake
Lot 1 Pinjar Road	Cleared – market garden
Lot 2 Pinjar Road	Parkland cleared
Lot 3 Pinjar Road	Partly vegetated with cleared areas
Lot 39 Pinjar Road	Partly vegetated with cleared areas, market gardens and orchard
Lot 42 Pinjar Road	Partly vegetated with cleared areas
Lot 302 Pinjar Road	Partly vegetated with cleared areas
Lot 303 Pinjar Road	Vegetated

There are no registered Contaminated Sites within the Structure Plan Area (DWER, 2023a).

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3.1.3 Surrounding Land Use

The surrounding land includes residential development to the west, market gardens, cleared land and native vegetation to the east, special rural lots and Lake Adams to the north and Mariginiup Lake and a strip of native vegetation to the south.

3.2 Heritage

3.2.1 Aboriginal Heritage

There is one Aboriginal Heritage Site mapped in the Structure Plan Area being Site 3741, Lake Mariginiup (DPLH, 2023) (Appendix 2). There is also a Heritage Place mapped in the Structure Plan area which is Place 28616 Lake Mariginiup Scarred Tree, located on the western side of Lake Mariginiup (Appendix 2). The Heritage Place as been lodged but is not yet assessed under Section 5 of the *Aboriginal Heritage Act 1972*.

3.2.2 European Heritage

Heritage sites can be listed under the following lists/registers:

- World Heritage Sites;
- National Heritage Sites;
- Commonwealth Heritage Sites;
- Sites on the register of the National Estate;
- Sites on the Western Australian Heritage Council Register; and
- Sites listed in the City of Wanneroo Scheme Heritage List.

There are no listed Heritage Sites or Interim Heritage Sites on the site (National Map, 2023; Heritage Council of Western Australia, 2023; DCCEE, 2023, City of Wanneroo, 2023).

3.3 Topography

The site is gently undulating with a high point on the north-western corner and generally slopes down to the south-east. Elevations range between approximately 46m and 70m Australian Height Datum (AHD) (Figure 2).

3.4 Geology and Soils

3.4.1 Geology

The site is mapped as part of the Spearwood System which has the highest relief of the dune systems on the Swan Coastal Plain (Bolland, 1998). The Spearwood system consists of slightly calcareous Aeolian sand remnant from leaching of the underlying Pleistocene Tamala limestone (Davidson, 1995).

3.4.2 Soils

Three Spearwood soil units are mapped on the site and are described as follows:

- Karrakatta Sand Yellow Phase (211Sp_Ky) which are on low hilly to gently undulating terrain and are yellow sand over limestone at 1-2 m (DPIRD, 2023), mapped over most of the site;

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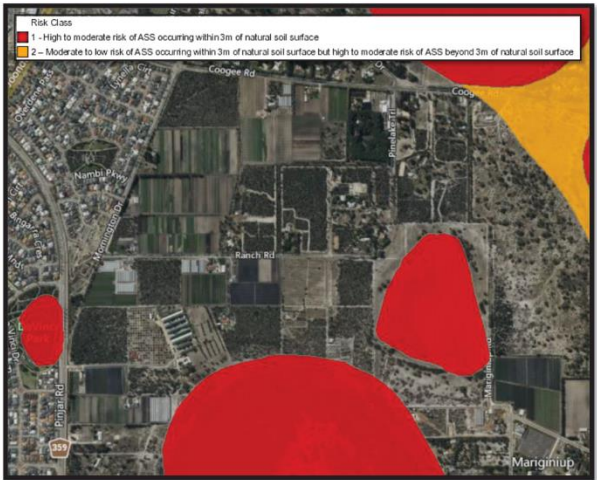
- Spearwood seasonal swamps Phase (211Sp_Ws) which are depressions with free water in winter made up of humus podzols and peat (DPIRD, 2023) which is mapped over the margins of Mariginiup Lake and over all of Little Mariginiup Lake; and
- Spearwood permanent lakes and swamps phase (211Sp_Wp) which are depressions with humus podzols and peats around the edges often with some diatomite (DPIRD, 2023) associated with Mariginiup Lake.

Soil Mapping is shown in Figure 3.

3.4.3 Acid Sulphate Soils

The soils on the site have a Low risk of Acid Sulphate soils <3m from the surface (National Map, 2023), with the exception of the soils of Mariginiup Lake and Little Mariginiup Lake which is mapped as ‘High to Moderate’ risk <3m from the surface (Plate 5).

Plate 5: Acid Sulphate Soil Risk Mapping



Source: National Map, 2023

3.4.4 Land Degradation Risks

The Land Degradation Risk Categories of the soil phases are outlined in Table 2.



Table 2: Land Degradation Risk Categories

Soil Type	Water Erosion	Wind Erosion	Waterlogging	Flooding	Salinity risk
211Sp_Ky	<3% of map unit has a high to extreme water erosion risk	>70% of map unit has a high to extreme wind erosion risk	<3% of map unit has a moderate to very high waterlogging risk	<3% of the map unit has a moderate to high flood risk	<3% of map unit has a moderate to high salinity risk or is presently saline
211Sp_Ws	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme wind erosion risk	>70% of map unit has a moderate to very high waterlogging risk	<3% of the map unit has a moderate to high flood risk	<3% of map unit has a moderate to high salinity risk or is presently saline
211Sp_Wp	<3% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme wind erosion risk	>70% of map unit has a moderate to very high waterlogging risk	<3% of the map unit has a moderate to high flood risk	<3% of map unit has a moderate to high salinity risk or is presently saline

Source: National Map, 2023

3.5 Hydrology and Wetlands

Annual Average Maximum Groundwater Levels for 1986 to 1995 range from a high of around 44m AHD at the eastern boundary down to 38.5m along the western boundary (Pentium Water, 2023). Depth to AAMGL ranges from 29m at the mid-northern boundary down to 1m for Mariginiup Lake. Groundwater flow is generally in a westerly direction.

There are two lakes within the Structure Plan Area which are Mariginiup Lake (Unique Feature Identifier (UFI) 7953) and Little Mariginiup Lake (UFI 8161) (Figure 4). Both of the lakes are mapped as Conservation Category. Conservation Category wetlands are considered the highest priority wetlands (EPA, 2008). The objective for these wetlands is to preserve and protect the existing conservation values of the wetlands through various mechanisms including:

- Reservation in national parks,
- Crown reserves and State owned land,
- Protection under Environmental Protection Policies, and
- Wetland covenanting by landowners (EPA, 2008).

No development or clearing is considered appropriate in Conservation Category wetlands.

Both lakes have been identified as being groundwater dependent without defined surface water flows in high rainfall events (Pentium Water, 2023).

Lake level monitoring of Lake Mariginiup has been undertaken since 1954 at a single surface water monitoring site (WIR ID 6162577) on a roughly monthly basis since 1954 (DWER, 2024). Monitoring since 2002 indicates lake levels have ranged from dry to 0.45m of water in 2003 (DWER, 2024) (Appendix 3). Historically (between 1978 and 1999) Little Mariginiup Lake had approximately 0.8m of



surface water seasonally however aerial photographs indicate that Little Lake Mariginiup does not contain water most of the time (Landgate, 2024).

3.6 Flora and Vegetation Surveys

There have been several flora and vegetation surveys undertaken in the area being:

- *Environmental Impact Assessment: Ranch Road, Mariginiup* (Ecoscape, 2010) which included a Detailed Flora and Vegetation survey (EPA, 2016) over the lots containing native vegetation (vegetated portions of Lots 19 and 100 Ranch Road and Lot 7 Coogee Road and Lots 19, 801, 22, 251 and 8 Ranch Road;
- *Mariginiup North District Structure Plan Environmental Assessment* (PGV Environmental, 2013), which included a preliminary vegetation assessment on all of the lots within the Structure Plan Area;
- *Level 2 Flora and Vegetation Survey Lot 5 Mornington Drive, Mariginiup* (City of Wanneroo) (Tauss, 2010);
- *Level 2 Flora and Vegetation Survey and Black Cockatoo Habitat Assessment 118 Coogee Road Mariginiup* (Strategen, 2017);
- *Environmental Assessment Study East Wanneroo District Structure Plan* (Emerge, 2018a) which was a preliminary vegetation assessment of the entire DSP;
- *Detailed Flora and Vegetation Assessment Lot 4 Coogee Road Mariginiup* (Emerge, 2018b);
- *Little Lake Mariginiup and Ecological Corridor Rehabilitation Plan* (Tranen, 2011);
- *Lot 7 Coogee Road, Mariginiup – Draft East Wanneroo District Structure Plan* (PGV Environmental, 2019a) which was a Reconnaissance Vegetation Survey (EPA, 2016) on the vegetated portion of Lot 7;
- *Lot 22 and 251 Ranch Road, Mariginiup – Environmental Report* (PGV Environmental, 2019b) which was a Reconnaissance Vegetation Survey;
- *56 Ranch Road and 294 Pinjar Road Detailed Flora and Vegetation Survey* (PGV Environmental, 2023a);
- *Lot 8, 22, 100 and 251 Ranch Road, Mariginiup Flora and Vegetation Survey* (PGV Environmental, 2023b); and
- *Vegetation Assessment of Lot 2 Ranch Road, Mariginiup. Memo* (Western Environmental, 2023)

3.7 Flora

There has been a total of 275 flora species recorded in Detailed Flora and Vegetation surveys undertaken in the Structure Plan area, of which 224 are native species and 56 (20.4%) are weed species (Tauss, 2010, Strategen, 2018, Emerge, 2018 and 2021, PGV Environmental, 2023a and 2023b). In previous flora surveys that have been undertaken on various lots there have been no significant species recorded on the site.

The Monocotyledon families with the highest number of species are from the Poaceae (Grass family), Asparagaceae (Asparagus family), Haemodoraceae (Blood Root family) and Orchidaceae (Orchid family). Dicotyledon families that had the highest number of species are Fabaceae (Pea and Wattle family), Asteraceae (Daisy family), Myrtaceae (Myrtle family) and Proteaceae (Banksia family).



3.8 Vegetation

3.8.1 Vegetation Complex

The vegetation on the western part of the site is part of the Karrakatta - Central and South Complex (shown in yellow in Plate 6) which is described as:

Predominantly open forest of Eucalyptus gomphocephala (Tuart) - Eucalyptus marginata (Jarrah) - Corymbia calophylla (Marri) and woodland of Eucalyptus marginata (Jarrah) - Banksia species. Agonis flexuosa (Peppermint) is co-dominant south of the Capel River (Heddl et al., 1980).

The vegetation on the eastern part of the site is the Pinjar Complex (shown in blue on Plate 6), broadly described as:

Vegetation ranges from woodland of Eucalyptus marginata (Jarrah) - Banksia species to a fringing woodland of Eucalyptus rudis (Flooded Gum) - Melaleuca preissiana (Moonah) and sedgelands (Heddl et al., 1980).

Plate 6: Vegetation Complex Mapping



Source – National Map, 2023

3.8.2 Vegetation Types

Previous surveys on the site have described the native vegetation on different parts of the site. Vegetation as described on each lot is shown in Table 3 and on Figure 5.

Table 3: Vegetation Types

Lot	Vegetation Type [#]
Lot 3 Coogee Road	VT1 <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus marginata</i> woodland over <i>Jacksonia sternbergiana</i> , <i>Adenanthos cygnorum</i> and <i>Xanthorrhoea preissii</i> open scrub over <i>Hibbertia hypericoides</i> , <i>*Watsonia meriana</i> and <i>Stirlingia latifolia</i> low shrubland over <i>*Ehrharta calycina</i> , <i>*Briza maxima</i> and <i>*Avena barbata</i> open bunch grassland on sandy loam soils (Strategen, 2017).
	VT2 <i>*Ehrharta calycina</i> open bunch grassland with emergent <i>Agonis flexuosa</i> and <i>Xanthorrhoea preissii</i> (Strategen, 2017).
Lot 4 Coogee Road	AfBEmHh Low open forest <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus marginata</i> over open shrubland <i>Jacksonia sternbergiana</i> and <i>Hibbertia hypericoides</i> over open mixed non-native grassland over sparse rushland <i>Desmocladius flexuosus</i> and <i>Alexgeorgea nitens</i> (Emerge, 2018).
	BEmAc Isolated clumps of low trees <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> over tall shrubland <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> and <i>Jacksonia furcellata</i> over mixed native shrubland over open grassland <i>*Ehrharta calycina</i> over rushland <i>Alexgeorgea nitens</i> and/or <i>Desmocladius flexuosus</i> (particularly where shrub cover is low) (Emerge, 2018).
	BiLf Low isolated trees of <i>Banksia ilicifolia</i> over shrubland <i>Lechenaultia floribunda</i> over sparse grassland <i>Ehrharta calycina</i> over sparse to dense rushland <i>Desmocladius flexuosus</i> and/or <i>Alexgeorgea nitens</i> (Emerge, 2018).
Lot 5 Coogee Road	Tauss BaBmEm <i>Banksia attenuata</i> - <i>Banksia menziesii</i> - <i>Eucalyptus marginata</i> low open forest over mid-dense <i>Allocasuarina humilis</i> - <i>Eremaea pauciflora</i> - <i>Hibbertia hypericoides</i> heath and open <i>Mesomelaena pseudostygia</i> sedges (Tauss, 2010).
Lot 6 Coogee Road	AfBaBmEmLOW <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland (Ecoscape, 2010).
Lot 7 Coogee Road	EmAf <i>Eucalyptus marginata</i> and <i>Allocasuarina fraseriana</i> over mostly weeds including Veldtgrass (<i>Ehrharta longiflora</i>), <i>Ursinia</i> (<i>Ursinia anthemoides</i>), Flatweed (<i>Hypochaeris glabra</i>), Pigface (<i>Carpobrotus edulis</i>) and Geraldton Carnation Weed (<i>Euphorbia terracina</i>). Some native shrubs are present including Grass Trees (<i>Xanthorrhoea preissii</i>), Blueboy (<i>Stirlingia latifolia</i>) and Marno (<i>Daviesia divaricata</i>) (PGV Environmental, 2019a).
	EmKg <i>Eucalyptus marginata</i> Low Open Woodland over <i>Kunzea glabrescens</i> Tall Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland.
	EmXp <i>Xanthorrhoea preissii</i> , <i>Jacksonia sternbergiana</i> , <i>Hibbertia hypericoides</i> , <i>Daviesia divaricata</i> , <i>Anigozanthos manglesii</i> , <i>Desmocladius flexuosus</i> and <i>Alexgeorgea nitens</i> (PGV Environmental, 2019a).



Lot	Vegetation Type [#]
Lot 23 Coogee Road	AfBaBmEmLOW <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland (Ecoscape, 2010).
Lot 24 Coogee Road	PEm Parkland cleared <i>Eucalyptus marginata</i> (Jarrah) and <i>Banksia</i> sp.
Lot 21 Pinelake Trail	PP <i>Pinus</i> sp. (Pine) Plantation
Lot 802 Mariginiup Road	JfPa Upland areas are described as scattered clusters of coloniser species <i>Jacksonia furcellata</i> (Grey Stinkwood). The understorey is dominated by the annual native species <i>Podotheca angustifolia</i> (Sticky Longheads) with the occasional <i>Corynotheca micrantha</i> (Sand Lily) (Tranen, 2011). BF Lake Lake is likely to be dominated by <i>Baumea articulata</i> with scattered <i>Corymbia calophylla</i> (Marri), <i>Eucalyptus rudis</i> (Flooded Gum) and <i>Melaleuca raphiophylla</i> (Paperbark) as per the description in Bush Forever (Government of Western Australia, 2000).
Lot 2 Ranch Road	AfBaBmEmLOW <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland (Ecoscape, 2010).
Lot 5 Ranch Road	BaBm(Af) <i>Banksia attenuata</i> / <i>B. menziesii</i> / <i>Allocasuarina fraseriana</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> / <i>Alexgeorgea nitens</i> Sedgeland (PGV Environmental, 2023a).
Lot 6 Ranch Road	Inferred BaBm(Af) Likely to be similar to Lot 5 Ranch Road, however may have less upper storey due to previous clearing.
Lot 8 Ranch Road	JfAc <i>Jacksonia furcellata</i> / <i>Adenanthos cygnorum</i> Tall Open Scrub over <i>Verticordia densiflora</i> Closed Low Heath (PGV Environmental, 2023b) Af <i>Allocasuarina fraseriana</i> Low Woodland over <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> Low Open Shrubland (PGV Environmental, 2023b)
Lot 10 Ranch Road	BF Uplands Uplands included in Bush Forever and described as <i>Eucalyptus marginata</i> Open Woodland to Open Forest; <i>Banksia attenuata</i> and <i>B. menziesii</i> Low Open Woodland to Low Open Forest (Government of Western Australia, 2000).
Lot 11 Ranch Road	
Lot 19 Ranch Road	PEm Parkland ? <i>Eucalyptus marginata</i> (Jarrah)



Lot	Vegetation Type [#]
Lot 22 Ranch Road	EmAfBaBm <i>Eucalyptus marginata</i> / <i>Allocasuarina fraseriana</i> / <i>Banksia menziesii</i> / <i>B. attenuata</i> Low Open Woodland over <i>Calytrix fraseri</i> / <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> / <i>Mesomelaena pseudostygia</i> Closed Low Heath (PGV Environmental, 2023b). AfBa <i>Allocasuarina fraseriana</i> / <i>Banksia attenuata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> Closed Low Heath (PGV Environmental, 2023b).
Lot 100 Ranch Road	EmAfBaBm <i>Eucalyptus marginata</i> / <i>Allocasuarina fraseriana</i> / <i>Banksia menziesii</i> / <i>B. attenuata</i> Low Open Woodland over <i>Calytrix fraseri</i> / <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> / <i>Mesomelaena pseudostygia</i> Closed Low Heath (PGV Environmental, 2023b).
Lot 250 Ranch Road	AfBaBmEmLOW <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland (Ecoscape, 2010).
Lot 251 Ranch Road	AfBa <i>Allocasuarina fraseriana</i> / <i>Banksia attenuata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> / <i>Hibbertia hypericoides</i> Closed Low Heath (PGV Environmental, 2023b).
Lot 801 Ranch Road	Parkland ? <i>Eucalyptus marginata</i> (Jarrah)
Lot 11142 Ranch Road	BF Lake Lakebed is likely to be dominated by <i>Baumea articulata</i> with scattered <i>Corymbia calophylla</i> (Marri), <i>Eucalyptus rudis</i> (Flooded Gum) and <i>Melaleuca raphiophylla</i> (Paperbark) as per the description in Bush Forever (Government of Western Australia, 2000)
Lot 14328 Ranch Road	
Lot 2 Pinjar Road	PEm Parkland cleared with scattered <i>Eucalyptus marginata</i> (Jarrah) and exotic trees
Lot 3 Pinjar Road	AfLW <i>Allocasuarina fraseriana</i> Low Open Woodland over <i>Kunzea ericifolia</i> Tall Open Shrubland over <i>Stirlingia latifolia</i> Low Open Shrubland over <i>Lyginia barbata</i> , <i>Mesomelaena pseudostygia</i> and <i>Alexgeorgea nitens</i> Open Sedgeland (Ecoscape, 2010).
Lot 39 Pinjar Road	BaBm <i>Banksia attenuata</i> / <i>B. menziesii</i> Low Open Woodland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Alexgeorgea nitens</i> Sedgeland (PGV Environmental, 2023a).
	Mp <i>Melaleuca preissiana</i> Low Closed Forest over <i>Xanthorrhoea preissii</i> / <i>Hypocalymma angustifolium</i> Low Shrubland (PGV Environmental, 2023a).
	BaBmEt <i>Banksia attenuata</i> / <i>B. menziesii</i> / <i>Eucalyptus todtiana</i> Low Open Woodland over <i>Hibbertia hypericoides</i> Low Shrubland (PGV Environmental, 2023a).



Lot	Vegetation Type [#]
Lot 42 Pinjar Road	BF Uplands Uplands included in Bush Forever and described as <i>Eucalyptus marginata</i> Open Woodland to Open Forest; <i>Banksia attenuata</i> and <i>B. menziesii</i> Low Open Woodland to Low Open Forest (Government of Western Australia, 2000). PF Lake Lakebed is likely to be dominated by <i>Baumea articulata</i> with scattered <i>Corymbia calophylla</i> (Marri), <i>Eucalyptus rudis</i> (Flooded Gum) and <i>Melaleuca raphiophylla</i> (Paperbark) as per the description in Bush Forever (Government of Western Australia, 2000)
Lot 302 Pinjar Road	
Lot 303 Pinjar Road	

Inferred from desktop studies unless otherwise specified



3.8.3 Vegetation Condition

The condition of the vegetation was assessed according to the system devised by Keighery and described in Bush Forever (Government of Western Australia, 2000) (Table 4).

Table 4: Vegetation Condition Rating Scale

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: Government of Western Australia, 2000.

The condition of the remnants of intact native vegetation is shown in Table 5 and on Figure 6. Generally, the remnant vegetation shows signs of disturbance and weed invasion and some areas of potential dieback and is rated Good to Very Good. Areas of higher disturbance and weed coverage were rated as Degraded. Small areas that have not been previously cleared and generally in central areas not impacted by edge effects were rated as Very Good and Excellent. There were no areas rated as pristine in the Structure Plan area. All areas that are cleared are Completely Degraded.

A bushfire swept through a large part of the site in November 2023. The native vegetation will recover in time back to the pre-fire condition. However, some new firebreaks may have been created to help fight the fire. An assessment of the vegetation regrowth in areas of POS and Parklands should be carried out to determine the condition of the vegetation in areas where native vegetation is proposed to be retained.

Table 5: Vegetation Condition

Lot	Vegetation Condition [#]
Lot 3 Coogee Road	The VT1 vegetation type was rated as being in Good and Very Good condition (Strategen, 2017). The VT2 vegetation type was Degraded and Completely Degraded (Strategen, 2017). There is a cleared track around and through the lot mapped as Completely Degraded (Strategen, 2017).

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Lot	Vegetation Condition [#]
Lot 4 Coogee Road	The AfBEmHh vegetation type was mapped as Very Good. BEmAc and Bilf was mapped as being in Very Good – Good condition. A small portion of BEmAc in the north was rated as Degraded. The remaining areas were mapped as Completely Degraded (Emerge, 2018).
Lot 5 Coogee Road	The vegetation was rated as being in Very Good to Excellent condition (Tauss, 2010).
Lot 6 Coogee Road	The vegetation was rated as Excellent (Ecoscape, 2010).
Lot 7 Coogee Road	The northern part of the lot is Completely Degraded, the vegetated portion was rated as mostly Good and there is a small area in the south that was rated as Very Good (PGV Environmental, 2019a).
Lot 23 Coogee Road	The vegetation was rated as Good (Ecoscape, 2010).
Lot 24 Coogee Road	Parkland cleared <i>Eucalyptus marginata</i> (Jarrah) and <i>Banksia</i> sp.
Lot 21 Pinelake Trail	The plantation is Completely Degraded
Lot 802 Marigninup Road	The vegetation is largely cleared and is Completely Degraded.
Lot 2 Ranch Road	The vegetation is rated as being in Excellent condition (Emerge, 2021).
Lot 5 Ranch Road	The condition of the vegetation on Lot 5 Ranch Road was mostly Very Good for the central and northern portions, with Good-Degraded and Degraded in the lower southern third of the site. The northern boundary was rated as Good as it had a high percentage of Perennial Veldtgrass (<i>Ehrharta calycina</i>) (PGV Environmental, 2023a).
Lot 6 Ranch Road	Inferred to be Degraded due to previous clearing and sparse coverage as noted in aerial photographs.
Lot 8 Ranch Road	The vegetation has been cleared on more than one occasion and was rated as Good as the vegetation structure is considered to have been significantly altered from the pre-clearing condition (PGV Environmental, 2023b)
Lot 10 Ranch Road	The intact vegetation was rated as Very Good to Excellent (Government of Western Australia, 2000).
Lot 11 Ranch Road	Completely Degraded due to Parkland clearing
Lot 19 Ranch Road	The condition of the vegetation that has not previously been cleared was mostly Very Good with areas surrounding that were Good or Degraded due to a high weed coverage (PGV Environmental, 2023b).
Lot 22 Ranch Road	The vegetation was mostly Good with a small amount of Degraded due to a high weed coverage (PGV Environmental, 2023b).
Lot 100 Ranch Road	The small area of vegetation was rated as Very Good (Ecoscape, 2010).
Lot 250 Ranch Road	The condition of the vegetation that has not previously been cleared was mostly Very Good with areas that were Good or Degraded due to a high weed coverage (PGV Environmental, 2023b).
Lot 251 Ranch Road	Completely Degraded due to Parkland clearing
Lot 801 Ranch Road	Riparian vegetation likely to be in Very Good condition with localised areas of disturbance being Degraded or Completely Degraded
Lot 11142 Ranch Road	Completely Degraded due to Parkland clearing
Lot 14328 Ranch Road	Remnant vegetation is Degraded (Ecoscape, 2010).
Lot 2 Pinjar Road	Condition ranged from Degraded to Very Good. The central part of the vegetation was Very Good, the Paperbark vegetation in the southwest corner was rated only Good due to 60% coverage of weeds in the understorey. The north-west corner was rated as Degraded due to a very high weed coverage and several dead <i>Banksia</i> trees (PGV Environmental, 2023a).
Lot 3 Pinjar Road	
Lot 39 Pinjar Road	

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Lot	Vegetation Condition ^a
Lot 42 Pinjar Road	Lots are generally cleared with scattered vegetation so likely to be Degraded to Completely Degraded
Lot 302 Pinjar Road	
Lot 303 Pinjar Road	

3.8.4 Floristic Community Types

Floristic Community Types (FCT) are based on the whole floristic composition of the vegetation rather than being determined by soil type and geomorphology (Vegetation Complexes) or the nature of the dominant species (Vegetation Association). Most of the State-based TECs and PECs are based on the FCT level of vegetation description. For vegetation to be able to be assigned an FCT the vegetation must be in Good condition or better.

Quadrat Data for several of the lots has been analysed to identify the Floristic Community. The vegetation in Lot 5 Coogee Road was determined to be FCT20a '*Banksia attenuata* woodlands over species rich dense shrublands' (Tauss, 2010) (Figure 7).

Lot 2 Ranch Road was inferred to be FCT20a (Ecoscape, 2010) (Figure 7). Further analysis of quadrat data by One Tree Botanical concluded that the vegetation in the northern half of the lot, ie above the 50m AHD contour level were strongly representative of FCT20a while the vegetation in the southern half were transitional between FCT20a and several other *Banksia* woodland FCTs (Western Botanical, 2023).

The computer analysis of quadrat data concluded that the BaBm(Af) on Lot 5 Ranch Road were most likely representative of FCT 28 '*Spearwood Banksia attenuata* or *Banksia attenuata* – *Eucalyptus woodlands*' (PGV Environmental, 2023a).

Lot 39 Pinjar Road contains FCT 28 '*Spearwood Banksia attenuata* or *Banksia attenuata* – *Eucalyptus woodlands*', FCT 22 '*Banksia ilicifolia* woodlands' and FCT 21c '*Low lying Banksia attenuata* woodlands and shrublands' (PGV Environmental, 2023a).

Analysis of data from Lots 22, 100 and 251 showed the vegetation is most closely aligned to FCT28 – *Spearwood Banksia attenuata* or *Banksia attenuata* – *Eucalyptus marginata* woodlands (PGV Environmental, 2023b).

The vegetation on Lot 4 Coogee Road was analysed as being representative of FCT21a – Central *Banksia attenuata* - *Eucalyptus marginata* woodlands and FCT22 – *Banksia ilicifolia* woodlands (Emerge, 2018).

3.9 Conservation Significance of Flora and Vegetation

3.9.1 Flora

No Threatened or Priority flora species have been recorded on the site in the past surveys.

3.9.2 Vegetation

Vegetation Complex

The status of each vegetation association mapped on the site is shown in Table 6 (DBCA, 2018).

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Table 6: Vegetation Association Statistics

Vegetation Complex	Pre-European Extent	Remaining on Swan Coastal Plain		Remaining in Secure Tenure	
	Area (ha)	Area (ha)	%	Area (ha)	%
Karrakatta Central and South	53,080	12,467	23.495	2,053.62	3.87
Pinjar	4,893	1,735.34	35.47	223.61	4.57

Both of the identified complexes have greater than 10% remaining in the Metropolitan Region which is considered a 'constrained area'.

The Bush Forever process used the 10% criterion to identify areas of regional significance. All areas of vegetation containing vegetation complexes with less than 10% remaining were considered regionally significant. For vegetation complexes with more than 10% remaining the aim of Bush Forever was to achieve a 10% protection status. Areas were chosen based on floristics and other criteria such as the presence of wetlands. Both the Karrakatta Central and South and Pinjar vegetation complexes have more than 10% remaining but less than 10% protected. Nevertheless, the areas of remnant vegetation within the site were not identified for retention in the District Structure Plan due to generally poorer condition fragmented by developed and cleared areas as well as fitting in with the overall consolidated planning over the district.

Threatened Ecological Community

The native vegetation on the site has potential to be a Threatened Ecological Community (TEC) at Commonwealth and State level due to the presence of *Banksia* woodland as a dominant vegetation type.

FCT20a '*Banksia attenuata* woodlands over species rich dense shrublands' is listed as a Critically Endangered TEC under State environmental legislation and is mapped on Lot 5 Coogee Road and the northern part of Lot 2 Ranch Road. The Structure Plan area has a total area of FCT20a of 8.48ha as shown on Figure 7.

The remaining areas analysed contain FCT21a, FCT21c and FCT28 are not listed as TECs or PECs in Western Australia. FCT22, *Banksia ilicifolia* woodlands, that occurs on Lot 3 Coogee Road is ranked as a Priority 3 ecological community. The total area of FCT22 is 0.11ha.

Banksia Woodlands of the Swan Coastal Plain TEC

The *Banksia* Woodlands of the Swan Coastal Plain Threatened Ecological Community (*Banksia* Woodland TEC) is listed as an Endangered TEC under the Commonwealth EPBC Act. The *Banksia* Woodland community is a conglomerate of a number of *Banksia*-dominated FCTs recognised at State level. The FCTs identified on the site form part of the *Banksia* Woodland TEC. There are also additional areas in the Structure Plan that have not been surveyed for FCT that contain *Banksia* dominated vegetation. However, the identification of one of the relevant FCTs on a site or *Banksia* dominated vegetation is not of itself sufficient to assign the vegetation to the *Banksia* Woodland TEC. The vegetation needs to meet specific criteria to be considered the TEC as follows.

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The Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community (Conservation Advice) (Commonwealth of Australia, 2016) describes the Banksia Woodland TEC as follows:

The ecological community is a woodland associated with the Swan Coastal Plain of southwest Western Australia. A key diagnostic feature is a prominent tree layer of Banksia, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range.

Table 7 outlines the Banksia Woodland TEC criteria contained in the Conservation Advice.

Table 7: Banksia Woodland TEC Criteria

Feature	Characteristic
Banksia Species	The patch must include at least one of the following diagnostic species: <ul style="list-style-type: none"> <i>Banksia attenuata</i> (Candlestick Banksia) <i>Banksia menziesii</i> (Firewood Banksia) <i>Banksia prionotes</i> (Acorn Banksia) <i>Banksia ilicifolia</i> (Holly-Leaved Banksia).
Vegetation Structure	<ul style="list-style-type: none"> A distinctive upper sclerophyllous layer of low trees (occasionally large shrubs more than 2 m tall), typically dominated or codominated³ by one or more of the <i>Banksia</i> species (<i>B. attenuata</i>, <i>B. menziesii</i>, <i>B. ilicifolia</i>, <i>B. prionotes</i>); An emergent tree layer of medium or tall (>10 m) height <i>Eucalyptus</i> or <i>Allocasuarina</i> (Sheoak) species may sometimes be present above the <i>Banksia</i> canopy. An understory that is often highly species-rich consists of: <ul style="list-style-type: none"> A layer of sclerophyllous shrubs of various heights; and, A herbaceous ground layer of cord rushes, sedges and perennial and ephemeral forbs, that sometimes includes grasses. The development of a ground layer may vary depending on the density of the shrub layer and disturbance history.
Vegetation Condition	An area of Banksia woodland needs to be at least in Good condition to be considered the TEC.
Patch Size	The Banksia woodland TEC needs to meet a minimum 'patch' size depending on its condition to qualify as the TEC, as follows: <ul style="list-style-type: none"> 'Pristine' – no minimum patch size 'Excellent' – 0.5ha 'Very Good' – 1ha 'Good' – 2ha

Source: Commonwealth of Australia, 2016

Table 8 outlines the results of surveys if a Banksia Woodland TEC assessment has been undertaken. If an assessment is not available an analysis of the vegetation to identify if the vegetation may be part of the TEC is provided in Table 8. In summary the Structure Plan area contains 24.82ha of Banksia Woodland TEC that is shown on Figure 7.



Table 8: Banksia Woodland TEC Analysis

Lot	Characteristic	Banksia Woodland TEC Analysis ^a
Lot 3 Coogee Road		Lot contains Banksia Woodland as part of a larger 'patch' (Strategen, 2017).
Lot 4 Coogee Road		The AfbEmHh vegetation, when combined with adjacent banksia woodland vegetation that appears to meet the criteria, represents the TEC (Emerge, 2018).
Lot 5 Coogee Road	Previous Survey	The site was surveyed prior to the listing of the Banksia Woodland TEC (Tauss, 2010).
	Banksia species	<i>Banksia attenuata</i> and <i>Banksia menziesii</i> dominated vegetation
	Vegetation Structure	Vegetation has the appropriate structure being <i>Banksia attenuata</i> and <i>Banksia menziesii</i> dominated over <i>Allocasuarina humilis</i> - <i>Eremaea pauciflora</i> - <i>Hibbertia hypericoides</i> heath and open <i>Mesomelaena pseudostygia</i> sedges
	Condition	The Lot was rated as being in Very Good to Excellent condition (Tauss, 2010).
	Patch Size	Approximately 8ha
	Conclusion	Vegetation on Lot 5 Coogee Road is representative of the Banksia Woodland TEC
Lot 6 Coogee Road	Previous Survey	The site was surveyed prior to the listing of the Banksia Woodland TEC (Ecoscape, 2010).
	Banksia species	<i>Banksia attenuata</i> and <i>Banksia menziesii</i> dominated vegetation
	Vegetation Structure	Vegetation has the appropriate structure being <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland
	Condition	The Lot was rated as being in Excellent condition (Ecoscape, 2010).
	Patch Size	Approximately 2.2ha
	Conclusion	Vegetation on Lot 6 Coogee Road is likely to be representative of the Banksia Woodland TEC
Lot 7 Coogee Road		The vegetation on the site was assessed as not meeting the requirement to be the Commonwealth listed Banksia Woodland TEC (PGV Environmental, 2019a).
Lot 23 Coogee Road	Previous Survey	The site was surveyed prior to the listing of the Banksia Woodland TEC (Ecoscape, 2010).
	Banksia species	<i>Banksia attenuata</i> and <i>Banksia menziesii</i> dominated vegetation
	Vegetation Structure	Vegetation has the appropriate structure being <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland
	Condition	The Lot was rated as being in Good condition (Ecoscape, 2010).
	Patch Size	Approximately 0.48ha and greater than 30m of cleared/Degraded to other areas of vegetation
	Conclusion	Vegetation on Lot 23 Coogee Road is not likely to be representative of the Banksia Woodland TEC



Lot	Characteristic	Banksia Woodland TEC Analysis ^a
Lot 2 Ranch Road	Previous Survey	The lot was surveyed by Emerge 2021 but the entire report has not been made available.
	Banksia species	<i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Banksia ilicifolia</i> dominated vegetation
	Vegetation Structure	Vegetation has the appropriate structure being Low Woodland
	Condition	The vegetation was rated as being in Excellent condition (Emerge, 2021).
	Patch Size	Approximately 4.1ha
	Conclusion	Vegetation on Lot 2 Ranch Road is representative of the Banksia Woodland TEC
Lot 5 Ranch Road		The lot contains 3.78ha of Banksia Woodland TEC (PGV Environmental, 2023a).
Lot 8 Ranch Road		The vegetation on Lot 8 does not meet the requirements on the basis that the required Banksia species are absent (PGV Environmental, 2023b)
Lot 10 Ranch Road and Lot 11 Ranch Road	Previous Survey	The lots have not been surveyed but are included in Bush Forever (Government of Western Australia, 2000).
	Banksia species	Uplands included in Bush Forever and described as <i>Eucalyptus marginata</i> Open Woodland to Open Forest; <i>Banksia attenuata</i> and <i>B. menziesii</i> Low Open Woodland to Low Open Forest
	Vegetation Structure	Vegetation has the appropriate structure from peripheral review of the area
	Condition	The intact vegetation was rated as Very Good to Excellent (Government of Western Australia, 2000).
	Patch Size	Approximately 7.5ha
	Conclusion	Vegetation on Lot 10 and 11 Ranch Road is representative of the Banksia Woodland TEC
Lot 22 Ranch Road		The condition of the vegetation that has not previously been cleared was mostly Very Good with areas surrounding that were Good or Degraded due to a high weed coverage (PGV Environmental, 2023b).
Lot 100 Ranch Road		The vegetation in Good condition or better meets the requirements of the Banksia Woodland TEC (PGV Environmental, 2023b).
Lot 250 Ranch Road	Previous Survey	The site was surveyed prior to the listing of the Banksia Woodland TEC (Ecoscape, 2010).
	Banksia species	<i>Banksia attenuata</i> and <i>Banksia menziesii</i> dominated vegetation
	Vegetation Structure	Vegetation has the appropriate structure being <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> , <i>B. menziesii</i> and <i>Eucalyptus marginata</i> Low Open Woodland over <i>Xanthorrhoea preissii</i> Open Shrubland over <i>Hibbertia hypericoides</i> Low Shrubland over <i>Mesomelaena pseudostygia</i> and <i>Lyginia barbata</i> Very Open Sedgeland
	Condition	The Lot was rated as being in Very Good condition (Ecoscape, 2010).
	Patch Size	Approximately 0.48ha and greater than 30m of cleared/Degraded to other areas of vegetation
	Conclusion	Vegetation on Lot 23 Coogee Road is not likely to be representative of the Banksia Woodland TEC
Lot 251 Ranch Road		The vegetation in Good condition or better meets the requirements of the Banksia Woodland TEC (PGV Environmental, 2023b).

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Lot	Characteristic	Banksia Woodland TEC Analysis ^a
Lot 39 Pinjar Road		There is 4.92ha on Banksia Woodland TEC on 294 Pinjar Road (PGV Environmental, 2023a).

3.10 Fauna

3.10.1 Habitat

Fauna habitat on the site consists of woodlands of *Banksia* species with dense understorey provides for most small terrestrial species of all assemblages (PGV Environmental, 2013; Emerge, 2018a).

The Structure Plan area is mostly cleared with some fragmented remnants of vegetation that are generally open woodland habitats. Fauna habitat can be assessed using a number of factors including, the size of the habitat, the level of habitat connectivity, availability of specific resources (e.g. tree hollows) and overall vegetation quality. The habitat was assessed according to the categories in Table 9.

Table 9: Fauna Habitat Value

Habitat Value	Description
High Quality Fauna Habitat	These areas closely approximate the vegetation mix and quality that would have been in the area prior to any disturbance. The habitat has connectivity with other habitats and is likely to contain the most natural vertebrate fauna assemblage.
Very Good Fauna Habitat	These areas show minimal signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) and generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be minimally affected by disturbance.
Good Fauna Habitat	These areas showed signs of disturbance (e.g. grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat if it had not been disturbed. The habitat has connectivity with other habitats and fauna assemblages in these areas are likely to be affected by disturbance.
Disturbed Fauna Habitat	These areas showed signs of significant disturbance. Many of the trees, shrubs and undergrowth are cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain weeds or have been damaged by vehicle or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.
Highly Degraded Fauna Habitat	These areas often have a significant loss of vegetation, an abundance of weeds, and a large number of vehicle tracks or are completely cleared. Limited or no fauna habitat connectivity. Faunal assemblages in these areas are likely to be significantly different to what might have been in the area pre-disturbance.

From: Coffey Environments, 2009

The Open Woodland habitat in the Structure Plan Area is fragmented and much is impacted by invasive weeds and tracks. The habitat has limited connectivity and is considered to be Good to Disturbed Fauna habitat. The cleared areas are Highly Degraded Fauna Habitat.

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There is likely to be a paucity of native mammals present as has been the case for most fragmented urban bushland remnants.

3.10.2 Conservation Significant Species

The species that are identified as possibly present on the site by Emerge (2018) are:

- Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) (Endangered);
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Endangered);
- Forest Red-tailed Black Cockatoos (*Calyptorhynchus banksii naso*) (Vulnerable);
- Rainbow Bee-eater (*Merops ornatus*) (Marine);
- Woollybush Bee (*Hylaeus globuliferus*) (Priority 3);
- Black-striped Snake (*Neelaps calonotos*) (Priority 3);
- Southern Brown Bandicoot, Quenda (*Isodon fusciventer*) (Priority 4);
- Western Brush Wallaby (*Notamacropus irma*) (Priority 4); and
- Graceful Sun-moth (*Synemon gratiosa*) (Priority 4).

Priority fauna species are not protected under State or Commonwealth environmental legislation. However, the general principle is to protect habitat where possible for these species in any new development.

Endangered and Vulnerable species are protected under the EPBC Act and EP Act. The Endangered and Vulnerable species which have habitat on the site are the three species of Black Cockatoos. Habitat for Black Cockatoos includes 'Foraging habitat' as is determined from the plant species that are present on the study area and evidence of feeding such as direct observation of birds or by chewed nuts and cones. Foraging plants utilised by each species of Black Cockatoo varies, with Carnaby's Black Cockatoo foraging on Eucalypts, pines and proteaceous species, whereas Forest Red-tailed Cockatoos prefer Eucalypts and Allocasuarina and many exotic species and Baudin's prefer mostly seeds of Marri and Jarrah, also Allocasuarina cones (DAWE, 2022).

'Breeding habitat' is defined as trees of species known to support breeding within the range of the species which either have a suitable nest hollow OR have a DBH of 500mm or greater (DAWE, 2022).

Past studies have found that on average hollow openings are 25 cm x 27 cm (Saunders *et al.*, 1982, Saunders and Dawson, 2017) and 30 cm x 34 cm (Johnstone *et al.*, 2013). The height of a hollow entrance off the ground is on average 19.384 m (Johnstone *et al.*, 2013). Nearly all hollows that are used for nesting by Black Cockatoos are located in the main trunk and have a vertical aspect (Johnstone *et al.*, 2013, Saunders and Dawson, 2017). Black Cockatoos are large birds with shoulders that are about 100 mm wide, therefore they require hollows with an entrance bigger than this (as shown above they are typically much larger), but the internal dimensions (depth and floor base) need to be much larger in order for it to be suitable to lay eggs in and for adults to be able to move around.

Previous research has found for Carnaby's Black Cockatoo a mean depth of 1.2 m and a floor diameter of 40 cm is required in order for it to be suitable to lay eggs in and for adults to be able to move around (Johnstone *et al.*, 2013, Saunders and Dawson 2017).

The Black Cockatoo Referral Guidelines define trees of certain species with a DBH of 300 to 500mm or greater, dependent on the tree species, as breeding habitat regardless of the presence or not of



hollows. The theory behind this definition is the concept that while the trees may not currently contain hollows, they are mature enough that in the next 50 years or so a hollow might form and be of use to Black Cockatoos for the purposes of breeding. In Precinct 8 the trees that may be potential breeding habitat are generally Jarrah and Marris which require a DBH of 500mm to be considered potential breeding habitat.

'Roosting habitat' is usually evident due to the presence of Black Cockatoos in the survey area in the evening and early morning and if there are scats or moulted feathers under the roosting area. Black Cockatoos utilise a wide range of native and non-native trees, situated within a variety of land-use types. Roosting habitat is generally in tall (average of > 25 m) tree species that have relatively thick trunks (average DBH of 1 m) and medium foliage density (average of 50%), and that are not too densely forested amongst other trees (average tree crown connectivity of 20 %) (Le Roux, 2017). Black cockatoos rely upon the availability of suitable night roosting sites in proximity to foraging resources, and particularly access to water within 2 km of the roost site (SEWPaC, 2012).

No roosting or breeding by Black Cockatoo species has been recorded on the site (DoP, 2011; National Map, 2023). The nearest roosting is recorded approximately 1.4km to the north-east and 1.7km to the south-west.

Most of the native vegetation outside of the Lakes contains quality foraging habitat for Black Cockatoos. The pine plantation on Lot 21 Pinelake Trail is also considered foraging habitat. Figure 8 shows area that contain habitat for Black Cockatoos. A total of 58.3ha of foraging habitat occurs in the Structure Plan area.



4 PROPOSED STRUCTURE PLAN

The proposed Structure Plan for Wanneroo Precinct 8 has been designed to retain the key environmental features identified in the District Structure Plan and refined during subsequent studies within the area. The Structure Plan includes residential areas, a Primary School, associated roads, drainage reserves, Public Open Space (POS), Parklands and areas for conservation (Appendix 1). The locations of the Parkland areas are generally consistent with the East Wanneroo District Structure Plan.

The Structure Plan includes the following key environmental factors:

- Bush Forever Site 147 Mariginiup Lake and Adjacent Bushland, Mariginiup which is 32.6% of the Structure Plan area is to be designated for Conservation. The Bush Forever site will protect:
 - The portion of Mariginiup Lake within the Structure Plan Area;
 - Lot 802 Ranch Road which contains Little Mariginiup Lake;
 - Vegetation in Lot 10 Ranch Road which protects upland vegetation representative of the Banksia Woodland TEC and likely to be in at least Very Good condition;
 - Fringing lake vegetation in Lots 42, 301, 302 and 1142 Ranch Road; and
 - Upland and lake fringing vegetation in part of Lot 39 Pinjar Road and Lots 5 and 6 Ranch Road which, although impacted by previous clearing with areas that are completely cleared provide opportunities for restoration and environmental enhancement.
- Three areas of Parklands that will retain native vegetation within the Structure Plan area as follows:
 - Vegetation on Lot 2 Ranch Road which is in Excellent condition, representative of FCT 20a, listed as a TEC in Western Australia as well as being part of the Banksia Woodland TEC;
 - Vegetation in the northern part of Lot 5 Coogee Road which is vegetation representative of FCT 20a TEC and part of the Banksia Woodland TEC and in Very Good to Excellent condition; and
 - Vegetation in Lot 6 Pinelake Trail.
- Three areas of POS that that will retain native vegetation as follows:
 - Bushland on Lot 5 and Lot 6 Ranch Road in mostly Very Good condition that is also representative of the Banksia Woodland TEC;
 - Vegetation on Lot 39 Pinjar Road in mostly Good to Very Good condition that is representative of the Banksia Woodland TEC; and
 - Vegetation on Lot 251 is mostly Very Good condition that is representative of the Banksia Woodland TEC.
- Fourteen other POS areas that provide outdoor amenity and may provide opportunities to retain trees and provide internal ecological linkages;
- A North-south linkage that provides an ecological corridors between Mariginiup Lake, Little Mariginiup Lake and Lake Adams to the north; and
- Wide road reserves that will also be able to accommodate tree retention.

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5 ENVIRONMENTAL ASSESSMENT

5.1 Land Use

There are no registered contaminated sites in the Structure Plan area. Previous and existing market garden areas may need a Preliminary Site Investigation to assess whether there are any areas of chemical contamination in the soil.

5.2 Heritage

The *Aboriginal Heritage Act 1972* (AH Act) protects all Aboriginal sites whether or not they are known and registered under the AH Act. Aboriginal Site 3741, Lake Mariginiup and Aboriginal Heritage Place 28616 Lake Mariginiup Scarred Tree are located within Bush Forever Site 147 as such will not be impacted by development.

The City of Wanneroo District Sense of Plan Policy acknowledges that Aboriginal heritage across the East Wanneroo is strongly linked to the wetland system that needs to be protected.

The policy encourages plans to consider and reference sites, people, and landscapes and reflect these through interpretation, amenity and local aesthetic throughout the public realm, including landscape design, public art and parkland links. Accordingly, to recognise Aboriginal cultural heritage and the significance of place, the Precinct 8 Mariginiup Local Structure Plan has provided for the representative planning and design of the following elements, noting that protection of Lake Mariginiup is assured within a state reservation:

- Definition of a cultural trail linking little Lake Mariginiup to Lake Adams
- Alignment of a cultural learning and interpretation trail and way finding
- Meeting places along the trail
- Naming of places
- Landscaping plans inclusive of expression of the local aesthetic in the public realm including parkland links and endemic plant species.

The proposed Structure Plan has been prepared with ongoing consultation with Traditional Owners.

5.3 Geology and Soils

5.3.1 Geology

The Spearwood geological unit is not a constraint for development.

5.3.2 Soils

The soils on the site do not provide an environmental impediment to the development of the site and have a low risk of acid sulphate soils. The areas of Spearwood seasonal swamps Phase and Spearwood permanent lakes and swamps phase are all contained within areas that are not proposed to be developed. The area that will be developed is on the Karrakatta Sand Yellow Phase

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Although the areas to be developed do not have a mapped risk of Acid Sulphate Soils an investigation to the depth of any proposed excavation or dewatering may require Investigation and possibly a Management Plan at subdivision.

The soils of the development area have a high risk of being susceptible to wind erosion and therefore dust controls will be required during construction. The area proposed to be developed is not susceptible to water erosion, waterlogging, flooding or risk of salinity.

5.4 Hydrology

Groundwater and stormwater management will be required to be addressed in accordance with *Better Urban Water Management* (WAPC, 2008). The Local Water Management Strategy (LWMS) is has been prepared for the Structure Plan and an Urban Water Management Plan (UWMP) will be required at the subdivision stage. The key objectives of the LWMS are:

- *Landscape packages which adopt Waterwise principles will be encouraged.*
 - *Detailed landscape plans for POS areas will be provided at subdivision stage which detail the proposed landscape treatments, plantings, community facilities and integration of drainage areas with the POS landscape design.*
 - *The first 15 mm of rainfall to be infiltrated close-to-source or treated in bioretention basins within each catchment to mimic predevelopment conditions.*
 - *The site consists of trapped and discharging catchments.*
 - *Runoff generated in trapped catchments is managed via retention basins which are sized to infiltrate up to the 1% AEP event.*
 - *The first 15 mm of runoff generated in discharging catchments will be treated in bioretention basins. Runoff in larger events will be conveyed to Little Mariginiup Lake or Lake Mariginiup.*
 - *Given the separation between the design surface and the proposed Controlled Groundwater Level (CGL), it is not anticipated that subsoil drainage is a significant design constraint for Precinct 8.*
 - *Subsoils may be installed beneath parts of the project area as a contingency against rising groundwater levels.*
 - *The monitoring completed captured a single winter peak for 2021, with a total of five months monitoring completed.*
 - *Quarterly groundwater levels and quality monitoring will be undertaken for a period of 18 months following practical completion, with a review after 18 months.*
 - *Quarterly surface water levels and quality monitoring will be undertaken for a period of 18 months following practical completion, with a review after 18 months.*
- Section 8 provides details of UWMP requirements and the roles and responsibilities related to implementation of the LWMS (Pentium Water, 2023).*

The LWMS provides guidance to ensure that the use of water in the development is best practice with water wise gardening. The surface water and groundwater quality and quantity will be managed in accordance with *Better Urban Water Management* as outlined in the LWMS with further details being provided at subdivision in Urban Water Management Plans (UWMPs).



There are no hydrological impediments to development of Precinct 8 that cannot be appropriately managed.

5.5 Wetlands

Mariginiup Lake and Little Mariginiup Lake are significant wetlands that are included in the structure plan, partially or wholly. The lakes and associated buffers form part of Bush Forever Site 147 and as such already have a measure of protection. These areas are also zoned as Parks and recreation. The wetland and associated buffers will be retained as natural areas in the Structure Plan.

The buffers to the lakes are the subject of a Buffer Assessment that has been prepared in conjunction with the Structure Plan. The Buffer Assessment identifies risks to the environmental values of the lakes and the role of the buffer to mitigate the risks.

A Foreshore Strategy has been developed to guide any development or provision of amenity within the buffer areas to ensure that the lakes remain a natural asset to the public while ensuring that management measures are in place to protect and enhance the wetland values of the lakes. The Foreshore Strategy broadly addresses:

- Management of the area during construction;
- Management of public access;
- Paths and amenities such as picnic tables;
- Landscaping and/or rehabilitation; and
- Ecological linkage.

5.6 Flora and Vegetation

A total of 17.4ha of native vegetation has been retained within the Structure Plan Area in Parklands, POS and the upland areas of Bush Forever Site 147. The high amount of Degraded vegetation retained is associated with Mariginiup and Little Mariginiup Lakes.

Table 10: Condition of Vegetation to be Retained/Cleared

Vegetation Condition	Total Area (ha)	Area Retained (ha)	% Retained	Area Cleared (ha)	% Cleared
Excellent	13.0	4.8	37	8.2	63
Excellent – Very Good	3.1	3.1	100	0	0
Very Good	10.8	3.2	30	7.6	70
Good – Very Good	4.4	0.4	9	4.0	91
Good	7.4	1.6	22	5.8	78
Good – Degraded	6.0	4.3	72	1.7	28
Degraded	33.8	29.3	87	4.5	13

The Structure Plan proposes to retain 14.32ha of the 24.82ha of the Banksia Woodland TEC on the site (58%) and 4.8ha of the 8.5ha of FCT20a (56%).



5.7 Fauna

The Structure Plan protects 19.3ha of the 58.3ha of Black Cockatoo foraging habitat, or 33%. The location of Parklands and POS also form habitat corridors that link vegetation in the Structure Plan Area from Bush Forever Site 147 through to Lake Adams to the north.

The retained vegetation will also provide habitat for the six Priority fauna species that are possible present on the site.

Trees retained in POS areas and in road reserves will provide fauna habitat values for birds and small reptiles.

Remaining impacts to native fauna can be managed through the standard Vegetation and Fauna Management Plan as required as a condition of subdivision. The Vegetation and Fauna Management Plans will include management measures for trapping and the relocation of terrestrial fauna prior to commencement of clearing and fencing of Parklands and vegetated POS areas to protect fauna. The management plan will include protocols and management measures to protect any nesting fauna such as Rainbow Bee-eaters and other small birds as well as the relocation of fauna disturbed during any clearing works.

5.8 Ecological Linkage

The Structure Plan retains vegetation with the highest environmental values, however due to past clearing these retained areas are in a highly fragmented landscape. Consultation during the development of the Structure Plan determined that retaining linkage from Mariginiup Lake, through Little Mariginiup Lake to Lake Adams provided an ecological linkage between areas. The linkage includes areas of natural vegetation in the Parklands on Lot 6 Pinelake Trail, areas of POS and trees to be retained in a widened road reserve.

5.9 Commonwealth Approvals

Any proposal or plan that is likely to have a significant impact on a Matter of National Environmental Significance requires referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for a level of assessment to be determined.

A development of a Lifestyle Village on Lot 4 Mornington Drive and Lot 5 Coogee Road has been referred under the EPBC Act (EPBC 2011/6020) and assessed as a 'Controlled Action'. Development on Lot 4 Coogee Road has also been referred (EPBC 2019/8452) and has a 'Not a Controlled Action' decision. Development of Lot 3 Coogee Road was referred in 2017 (EPBC 2017/8011) and also was assessed as 'Not a Controlled Action'.

For the future development of the balance of the Structure Plan area, the relevant Matters of National Environmental Significance include fauna listed under the EPBC Act, more specifically the three Black Cockatoos and the presence of vegetation that is part of the Banksia Woodland of the Swan Coastal Plain TEC. Using published criteria for levels of significance, the complete clearing of the vegetation outside of existing approvals would constitute a significant impact on any of these matters.

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Referral of a proposal under the EPBC Act can occur at any stage of a development, ie rezoning, structure planning or subdivision. Referral of the whole Structure Plan area (less those areas already referred) would result in a 'Controlled Action' decision meaning the proposal to clear would need to go through a full environmental assessment at Commonwealth level.

The outcome of a proposal to clear individual sites, rather than the whole of Precinct 8, is uncertain and would depend on the amount of vegetation proposed to be cleared. The outcome can be 'Not a Controlled Action' which is an approval under the act to undertake the 'Action' in the manner as referred or a 'Controlled Action' which requires assessment under the EPBC Act. Given that the main vegetation type in the Structure Plan area to be cleared is Banksia Woodland that is a TEC and also provides Black Cockatoo habitat, most if not all referrals are likely to get a Controlled Action decision.

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6 CONCLUSION

The Environmental Assessment of the East Wanneroo Precinct 8 Structure Plan concludes that the Structure Plan retains the key environmental issues in the Precinct which are Bush Forever Site 147, remnant vegetation that is representative of FCT 20a and vegetation that meets the criteria as Banksia Woodland TEC. The retained vegetation also provides habitat for Black Cockatoos.

Specifically the Structure Plan protects the following values:

- Mariginiup Lake and Little Mariginiup Lake and associated buffers;
- Protection of 35% of vegetation that is in Good condition or better;
- Protection of 56% of TEC FCT20a;
- Protection of 58% of the Banksia Woodland TEC;
- Protection of 33% of Black Cockatoo Habitat;
- Preservation of ecological linkage between Mariginiup Lake, Little Mariginiup Lake and Lake Adams; and
- Improved stormwater management and groundwater protections, potentially improving the hydrological regimes and water quality in Mariginiup Lake and Little Mariginiup Lake, by implementing the LWMS;

Residual impacts can be mitigated by:

- Retention of trees and native vegetation within POS and road reserves to be identified through subdivision design;
- Management and enhancement of Parklands and vegetated POS areas to maintain and improve the vegetation within these areas;
- Management of the Lake buffers in accordance with the Foreshore Strategy; and
- Potential rehabilitation of Degraded and Completely Degraded areas within Bush Forever Site 147.

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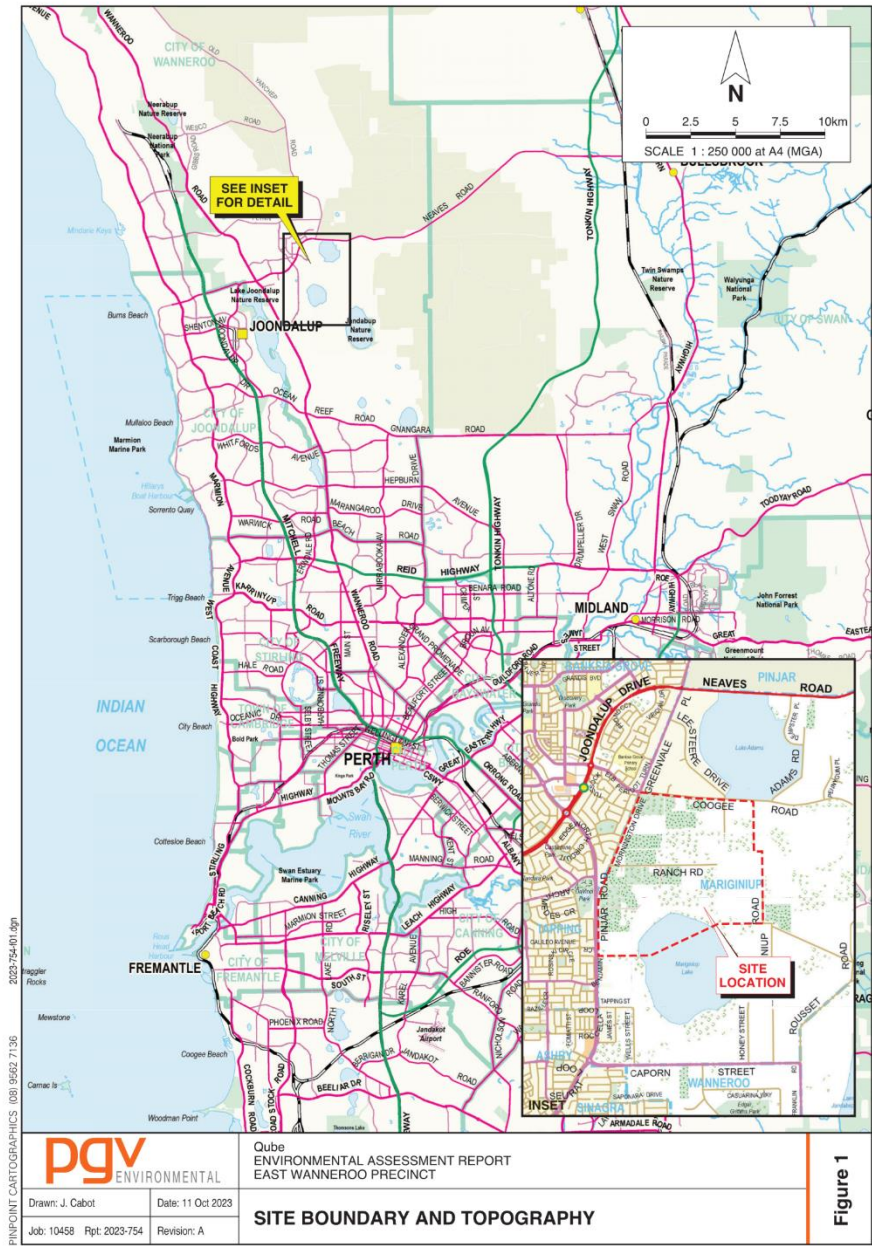
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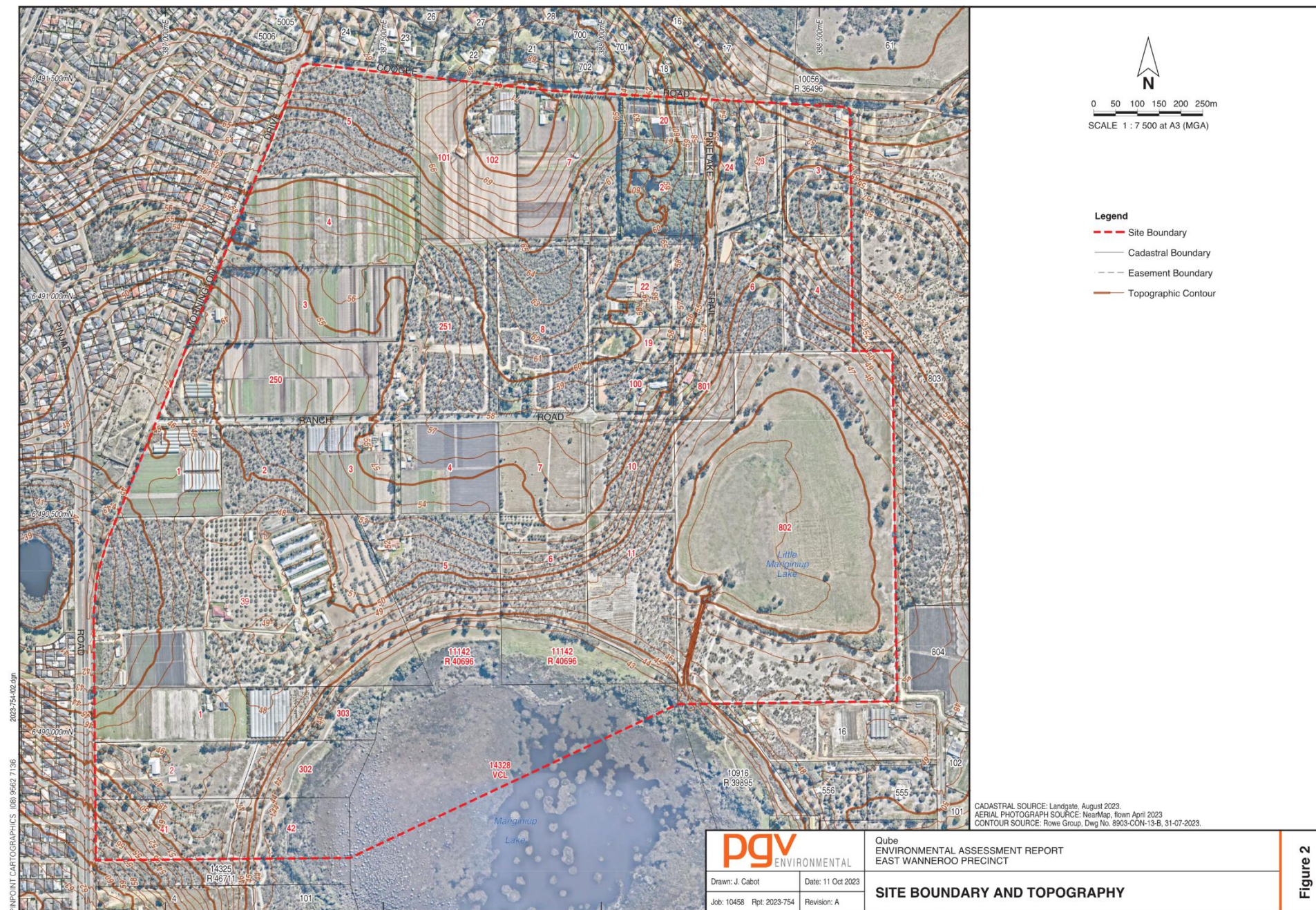
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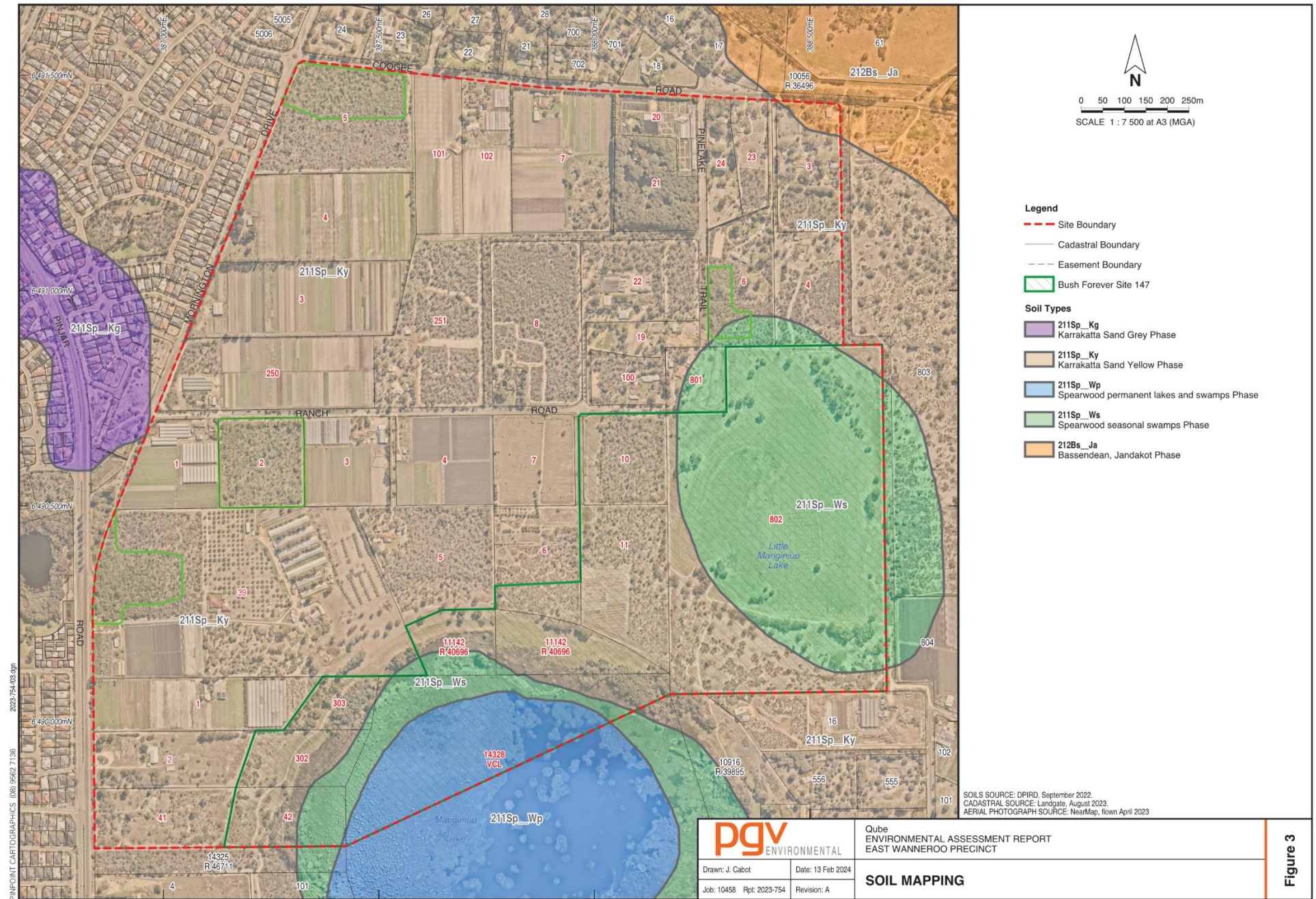
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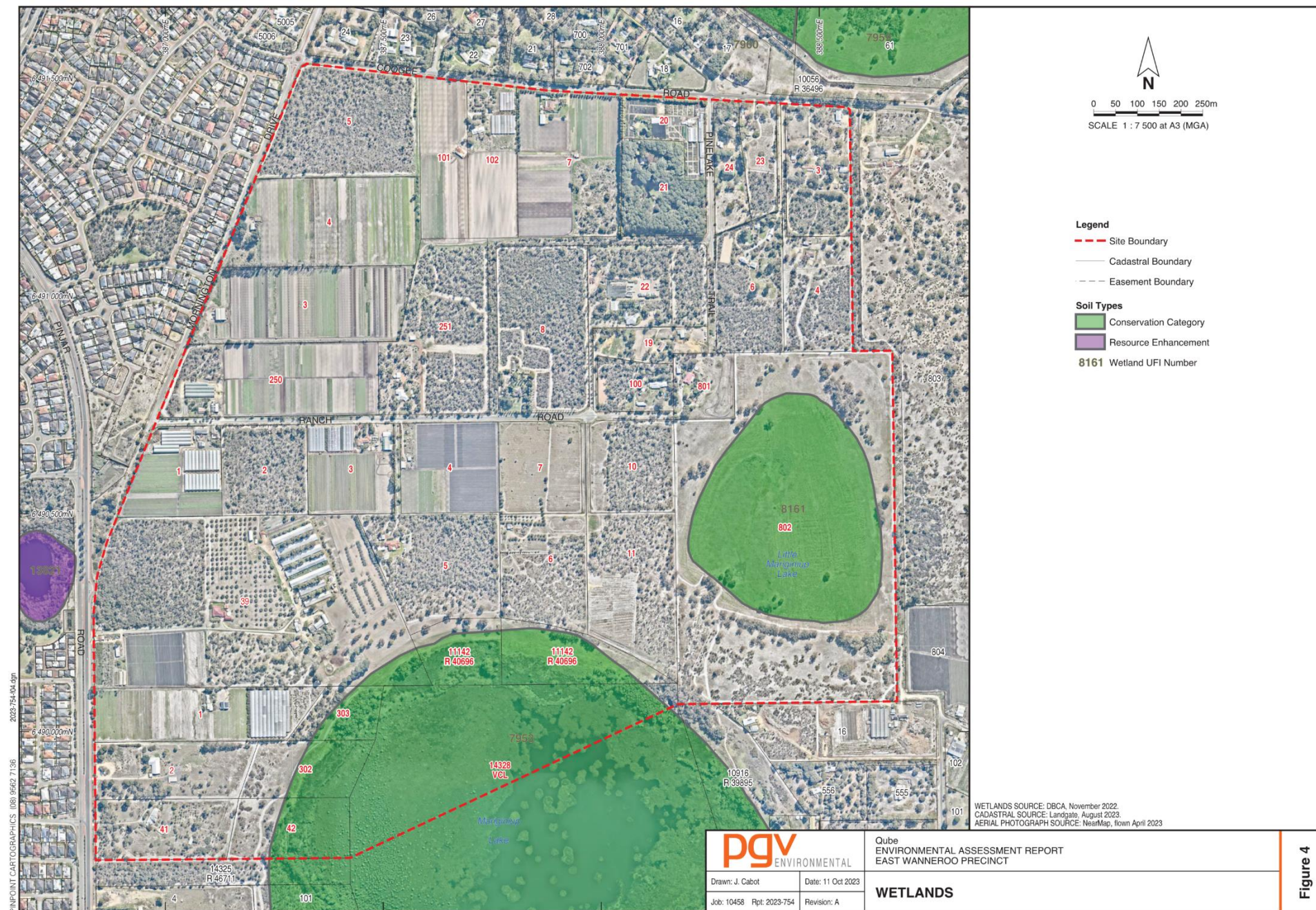
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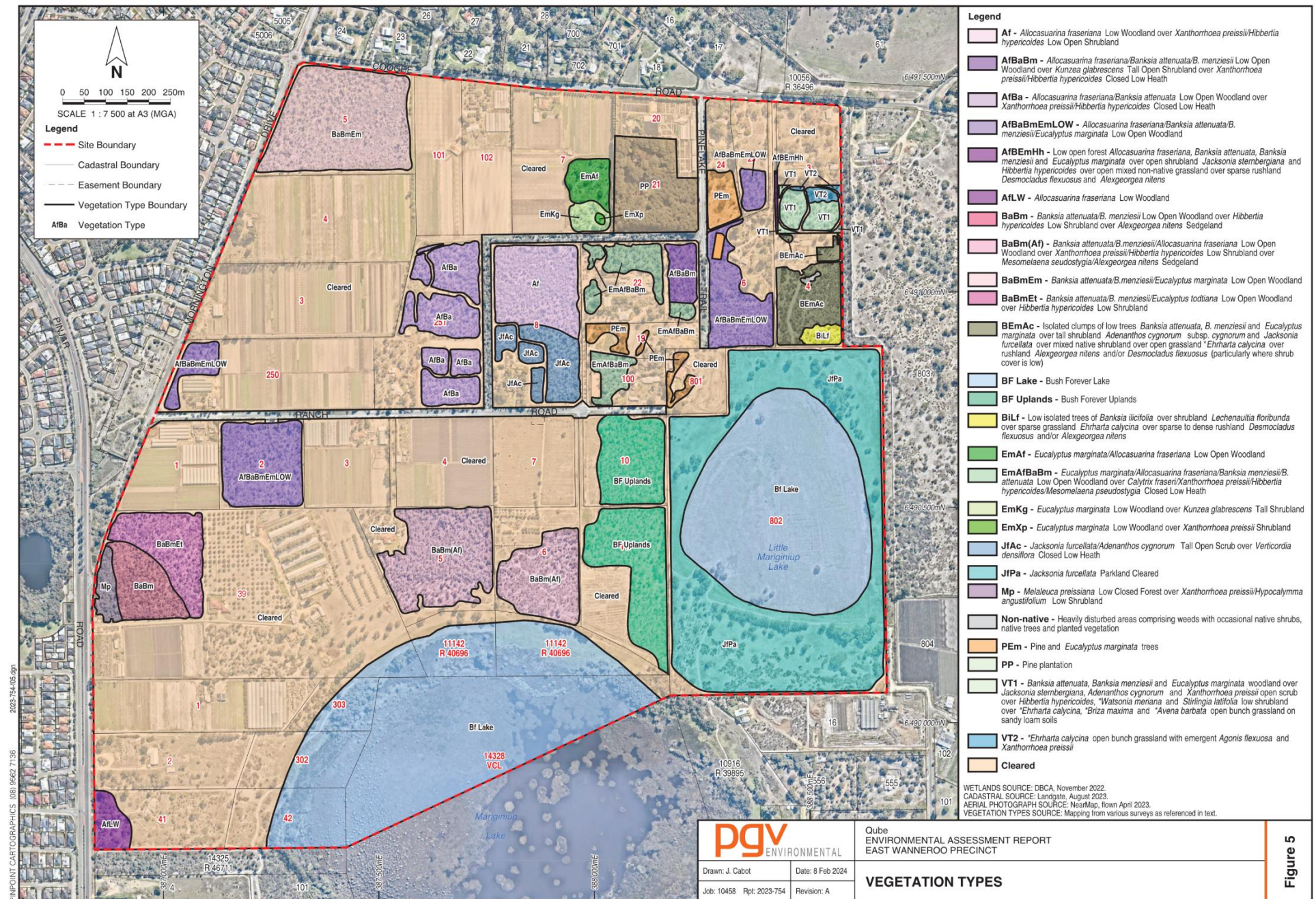


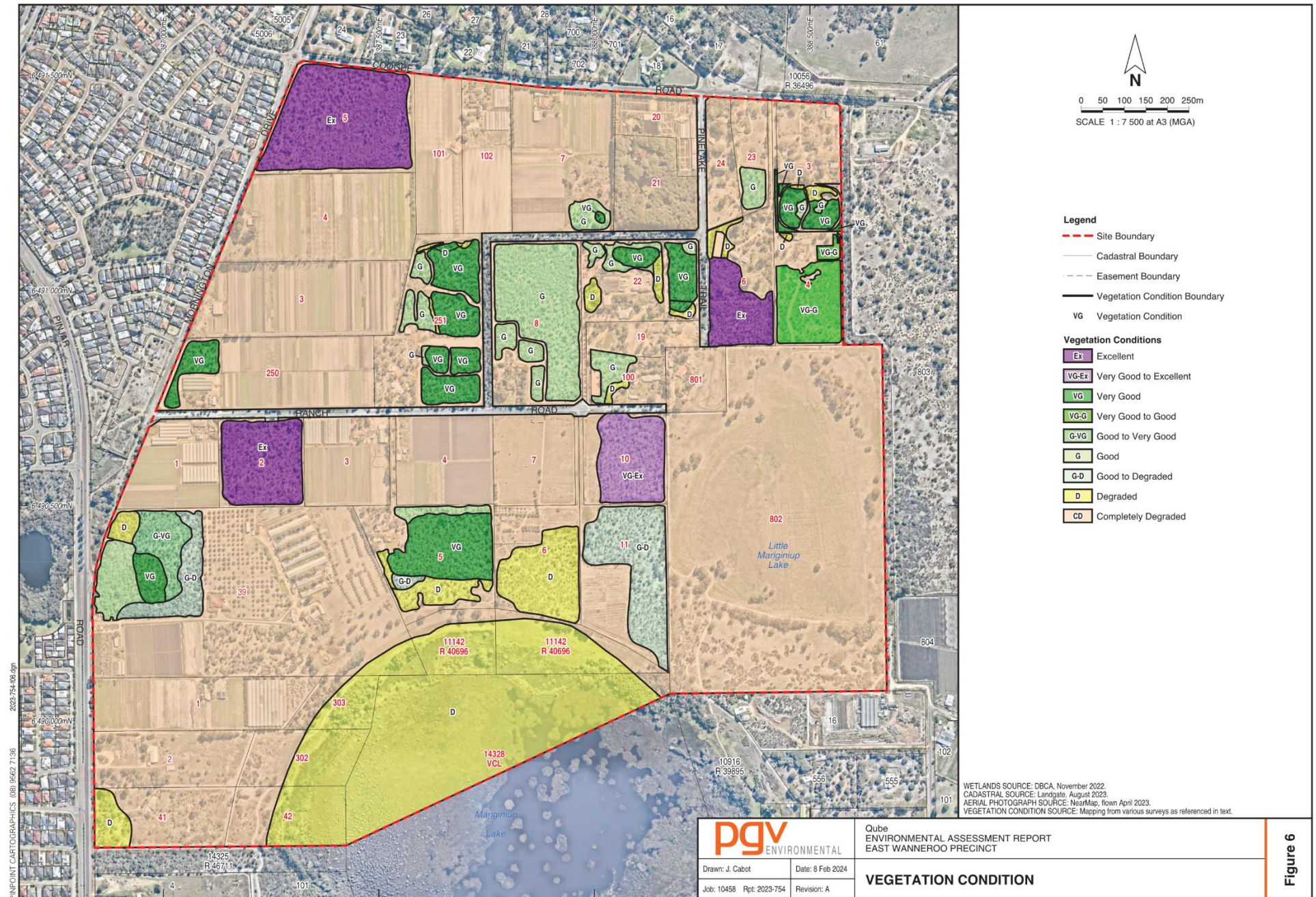
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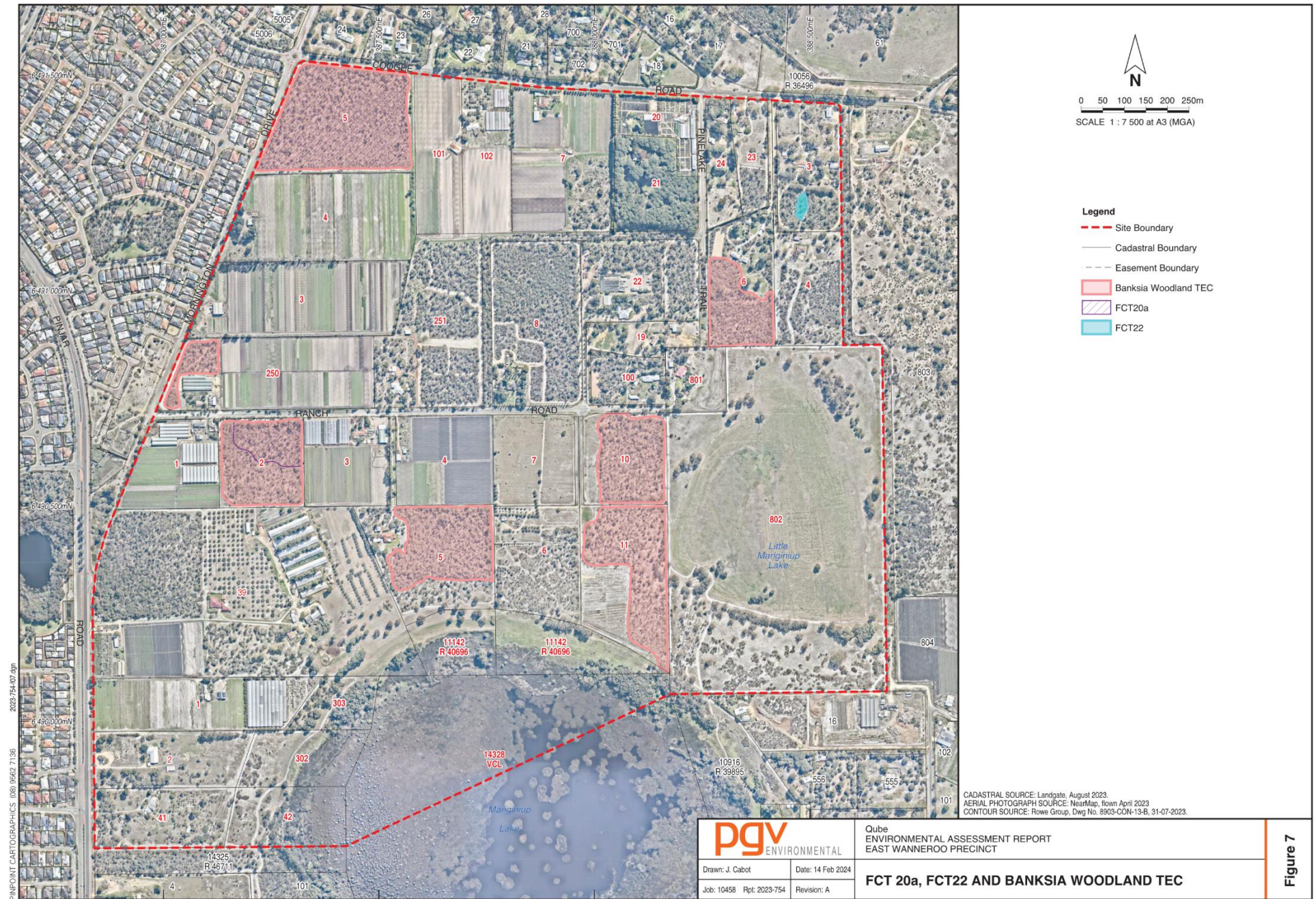


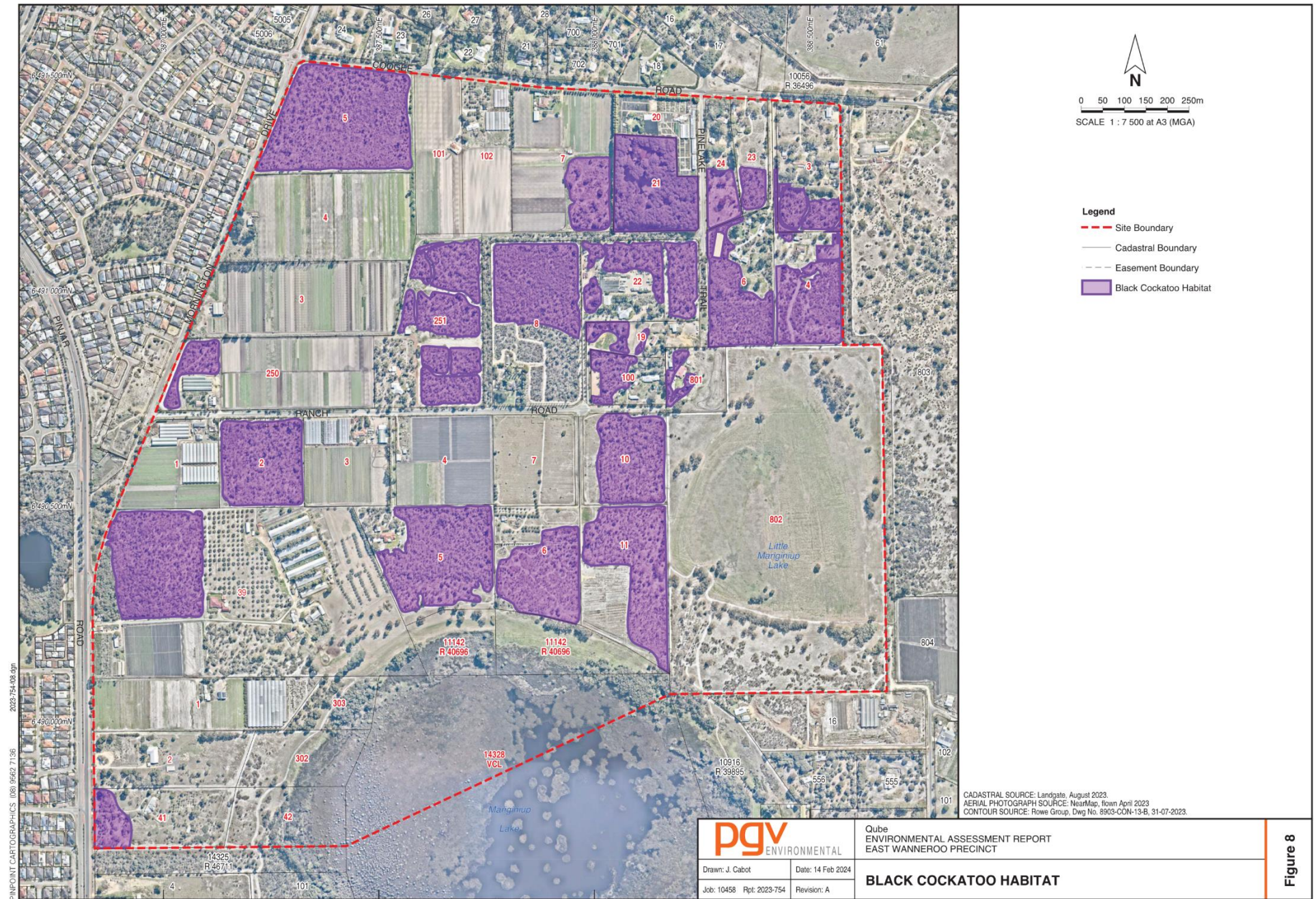














Attachment 5

Bushfire Management Plan





Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Precinct 8 - East Wanneroo

Suburb: Wanneroo State: WA P/code: 6065

Local government area: City of Wanneroo

Description of the planning proposal: Residential Development

BMP Plan / Reference Number: QPGEP8BW Version: Final Date of Issue: 28 March 2024

Client / Business Name: Qube Property Group

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name Sue Brand	Accreditation Level Level 2 BPAD Practitioner	Accreditation No. 36638	Accreditation Expiry 30 April 2024
Company MBS Environmental	Contact No. 0439 435 110		

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner *Sue Brand* Date 28 March 2024

BUSHFIRE MANAGEMENT PLAN
PRECINCT 8, EAST WANNEROO

PREPARED FOR:

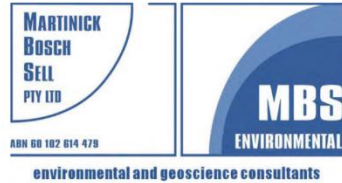
QUBE PROPERTY GROUP
QUBE

MARCH 2024

PREPARED BY:

Martinick Bosch Sell Pty Ltd
4 Cook Street
West Perth WA 6005
Ph: (08) 9226 3166
Email: info@mbsenvironmental.com.au
Web: www.mbsenvironmental.com.au





PRECINCT 8, EAST WANNEROO BUSHFIRE MANAGEMENT PLAN

Distribution List:

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Qube Property Group	Rob Gardiner	[01]	28 March 2024
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Document Control for Job Number: QPGEP8BW

Document Status	Prepared By	Authorised By	Date
Draft Report	Sue Brand	Matt Todd	27 March 2024
Final Report	Sue Brand	Matt Todd	28 March 2024

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APPENDICES

Appendix 1:	Landscape Master Plan
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1. BACKGROUND INFORMATION

Qube Property Group (QPG) is the lead organisation progressing the development of Precinct 8 East Wanneroo as per the general provisions of the District Structure Plan. A bushfire management plan (BMP) is required to support the Local Structure Planning (LSP) process that will see many of the current rural Lots developed as an urban residential area. MBS Environmental (MBS), has been commissioned by Qube Property Group to prepare the BMP for the Precinct (the Site, the Precinct). The broad aim of the assessment process was to identify potential bushfire risks to future properties and their management when the Site is developed.

The Site is located within a designated bushfire prone area as determined by the Fire and Emergency Services Commissioner, Office of Bushfire Risk Management (OBRM), Department of Fire and Emergency Services (DFES) (2021). Accordingly, there is a requirement for landowners to undertake an assessment to determine the risks and identify appropriate management strategies such that the development does not increase the inherent bushfire risk.

Any portions of the nominated Lots being developed by QPG and its alliance members that will be located within 100 m of vegetation designated as being bushfire prone (classified vegetation) will mean the need for a bushfire attack level assessment (BAL-assessment) and assigning a BAL-rating that will determine appropriate construction standards as per AS 3959:2018 *Construction of Buildings in Bushfire-prone Areas* (AS 3939:2018). The BAL-assessment component of this document considers current subdivision design and site conditions. It has also considered the provisions of *State Planning Policy (SPP) 3.7 Planning in Bushfire Prone Areas* (Department of Planning and the Western Australian Planning Commission (WAPC), 2015) and *Guidelines for Planning in Bushfire Prone Areas* (the *Guidelines*) (Department of Planning, Lands and Heritage (DPLH) and the Western Australian Planning Commission (WAPC), V1.4, 2021).

1.1 LOCATION

Precinct 8 East Wanneroo is approximately 262.03 ha within the City of Wanneroo, and is bounded by (Figure 1):

- Pinjar Road and Mornington Drive to the west.
- Coogee Road to the north.
- The future extension of Mariginiup Road to the east.
- Private property and a portion of Lake Mariginiup to the south.

It currently comprises 40 Lots and Reserves in private ownership, the State of Western Australia, and the Western Australian Planning Commission.

1.2 AIMS AND OBJECTIVES

The aim of the BMP is to outline the bushfire management methods and requirements that will be implemented within the Precinct. Accordingly, broad aims include:

- To reduce the occurrence of and minimise the impact of bushfire to the life and property of future residents and the environment.
- Allow easy access of firefighters if a fire does occur.
- Protect the landscape within the site as far as is possible.
- Document fire prevention requirements of the area to which it relates.

The objectives of this BMP are to:

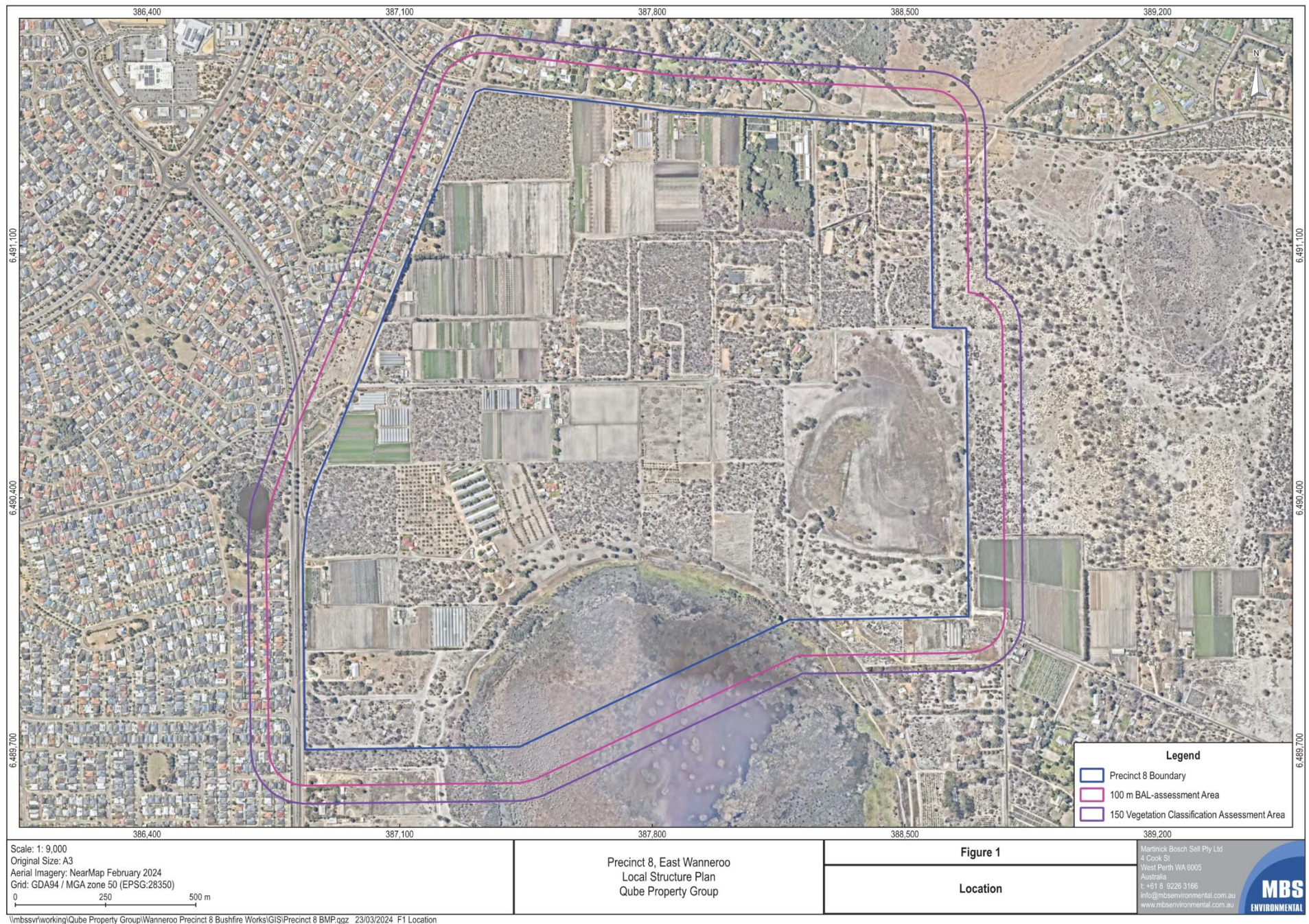
- Define land use areas and values within the subdivision, with the entire subdivision being developed as urban residential Lots except for the proposed Sports Amenities Building and primary school along Ranch Road, vegetated areas associated with Lake Mariginiup, other remnant bushland areas to be retained, and various public open space (POS) areas that will be landscaped and retained in a low-threat state as defined by Clause 2.2.3.2 of AS 3959:2018.
- Define and rank bushfire hazard areas according to the vegetation type and fire fuels present.
- Outline the roles and responsibilities of individuals and organisations in relation to bushfire management within the subdivision.
- Document bushfire management strategies for the subdivision, taking into consideration:
 - Vegetation to be retained in various locations within the Precinct, including in the vicinity of Lake Mariginiup and nominated bushland Lots.
 - The need for building construction standards where vegetated areas interface with the urban development.
 - Identify access for firefighting operations and maintenance in and around vegetated areas and stages of development.
 - Define an assessment procedure that will evaluate the effectiveness and impact of existing and proposed fire prevention activities and strategies.
 - Document the performance criteria and acceptable solutions adopted for the Site.

1.3 DOCUMENT PREPARATION

This document has been prepared by Sue Brand, an accredited Level 2 Bushfire Planning and Design (BPAD) practitioner with the Fire Protection Association Australia. Activities involved with the plan preparation process included:

- Assessing the vegetation type and class present within and adjacent to the proposed development site using descriptions provided in AS 3959:2018.
- Assessing the slope that could influence bushfire spread within the Precinct.
- Assigning hazard ratings based on the vegetation types present on and offsite.
- Determining bushfire attack level (BAL) contours for locations that will be within 100 m of classified vegetation within the Precinct boundary or in proximity to the Site.
- Suggesting management strategies that could be implemented based on current and projected site considerations.
- Preparing this BMP.

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2. CONSIDERATION OF BUSHFIRE THREAT

2.1 SITE CHARACTERISTICS

2.1.1 Regional Context

Perth is located within the Swan Coastal Plain region of the Interim Biogeographical Regionalisation of Australia (IBRA). The Swan Coastal Plain comprises of two major divisions, namely the Swan Coastal Plain 1 — Dandaragan Plateau and Swan Coastal Plain 2 — Perth Coastal Plain. The Site is in the Perth subregion, which is broadly characterised as including areas of Jarrah and Banksia woodlands on sandy soils in a series of sand dunes, along with wetland areas, often within the interdunal swales (Mitchell, Williams, and Desmond, 2002).

2.1.2 Vegetation

Vegetation within and in proximity to the Site includes a mix of remnant native bushland, market gardens, areas of grassland, and gardens associated with residences. The remnant bushland is primarily scrub vegetation dominated by Banksias and other shrubs, with the occasional taller tree present (Figure 2). Other vegetation includes a remnant pine plantation and areas of grassland associated with cleared areas and around the perimeter of Lake Mariginiup.

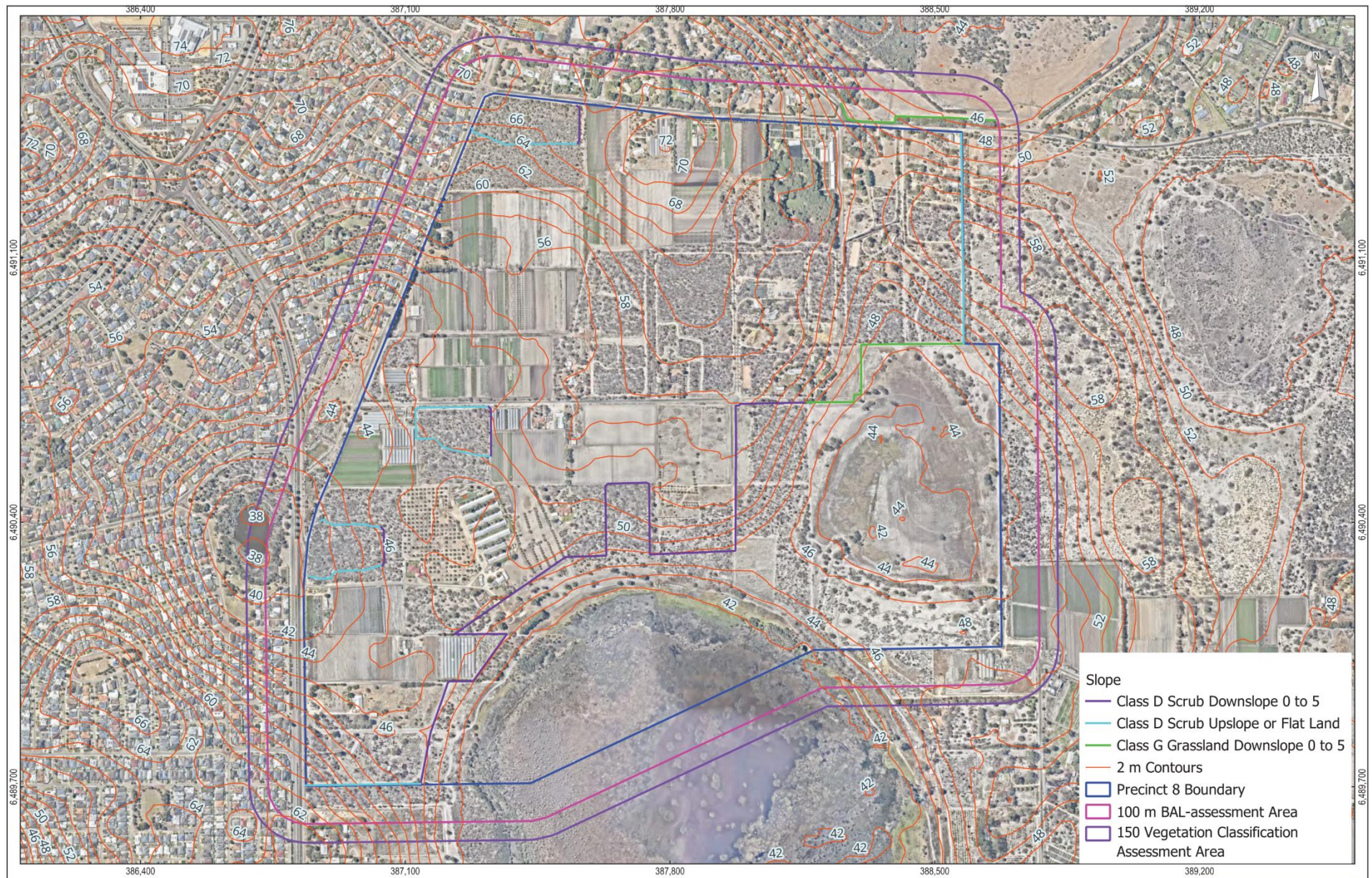


Figure 2: Vegetation within the Precinct

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2.1.3 Contours and Slope

As a generalisation, the site slopes downward from north (72 m Australian Height Datum (AHD)) to south towards Lake Mariginiup (42 m AHD). However, as the Site is located on the Swan Coastal Plain that is dominated by a series of dunal formations including the Bassendean Dune System and the Spearwood Dune System, there are higher patches associated with dune ridges to the southwest, southeast, and towards the west. For the purposes of the bushfire assessment process, the slope was assessed for patches of vegetation that would be retained in the longer term, and included areas that are upslope or flat land as well as those that are downslope 0 to 5° (Figure 3).



Scale: 1:9,000
 Original Size: A3
 Aerial Imagery: NearMap February 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)
 0 250 500 m

Precinct 8, East Wanneroo
 Local Structure Plan
 Qube Property Group

Figure 3

Contours and Slope

Martinek Bosch Sell Pty Ltd
 4 Cook St
 West Perth WA 6005
 Australia
 t: +61 8 9226 3166
 info@mbsenvironmental.com.au
 www.mbsenvironmental.com.au

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 ENVIRONMENTAL

\\mbssvr\working\Qube Property Group\Wanneroo Precinct 8 Bushfire Works\GIS\Precinct 8 BMP.qgz 23/03/2024 F3 Contours and Slope

2.1.4 Land Use

The dominant land use within the Precinct is market gardening and remnant vegetation (Figure 4). As the development progresses over time, the land use will change to include residential development and areas of public open space (POS) with varying levels of remnant vegetation.



Figure 4: Current Land Use

2.1.5 Environmental Considerations

The planning process has considered the various environmental values, with the identification of remnant bushland to be retained in areas of POS, along with retention of the riparian vegetation around the perimeter of Lake Mariginiup. Several assessments were carried out to support the District Structure Plan preparation process including:

- *Environmental Assessment Study — East Wanneroo District Structure Plan* (Emerge Associates, 2018a).
- *Preliminary Environmental Assessment of Planning Investigation Areas — East Wanneroo District Structure Plan* (Emerge Associates, 2018b)
- *Assessment of Proposed Environmental Outcomes — East Wanneroo District Structure Plan* (Emerge Associates, 2019).

Recent environmental assessment activities were carried out by PGV Environmental in 2023 that characterised current Site conditions, including those relating to flora, vegetation, fauna, and wetlands:

- *Environmental Assessment Report — East Wanneroo Precinct 8* (2024a).
- *Wetland Buffer Assessment and Foreshore Strategy — East Wanneroo Precinct 8* (2024b).

The outcomes of these assessments have been considered during preparation of this BMP.

2.1.6 Landscaping

The Landscape Master Plan for Precinct 8 was developed by Considered Space (2024), with four public open space types defined (Figure 5):

- **Pocket parks** — small areas that allow for passive recreation, shade trees, and irrigated turf.
- **Local parks** — larger areas with some active and passive recreation opportunities, shade trees, and irrigated turf.
- **Neighbourhood parks** — larger parks that include medium scale active and passive recreation opportunities, large areas of irrigated turf, and patches of remnant bushland.
- **Parkland** — includes wetland areas, bushland vegetation and conservation areas, open spaces, and revegetation and restoration options to enhance biodiversity.

A copy of the Landscape Master Plan is provided in Appendix 1.

For the purposes of preparing this BMP, it was assumed that the pocket and local parks will meet the definition of low-threat vegetation as per AS 3959:2018 and will not contribute to BAL-ratings in nearby areas. The extent of retained native vegetation within the neighbourhood parks has informed the BMP according to the extent of vegetation to be retained and its proximity to other patches of classified vegetation to determine the impact on BAL-ratings in nearby areas.

Parkland areas are those with the greatest amount of retained vegetation and are classified vegetation as per AS 3959:2018. As the area surrounding the lakes has been subject to various threatening processes and were assessed as being Degraded or Completely Degraded by PGV Environmental (2024a). These locations also have the potential to undergo restoration/revegetation activities to improve biodiversity and other values, so have been considered from a 'worst-case' scenario perspective, with the entire buffer area restored to Class D Scrub typical of the Banksia woodland recorded within portions of Precinct 8, noting that restoration/revegetation plans will be included in the Foreshore Management Plan when it is prepared. It is expected that as plans are finalised and adjustments to the subdivision design occur over time, assumptions will be refined and implications for the management of bushfire will be adjusted accordingly.

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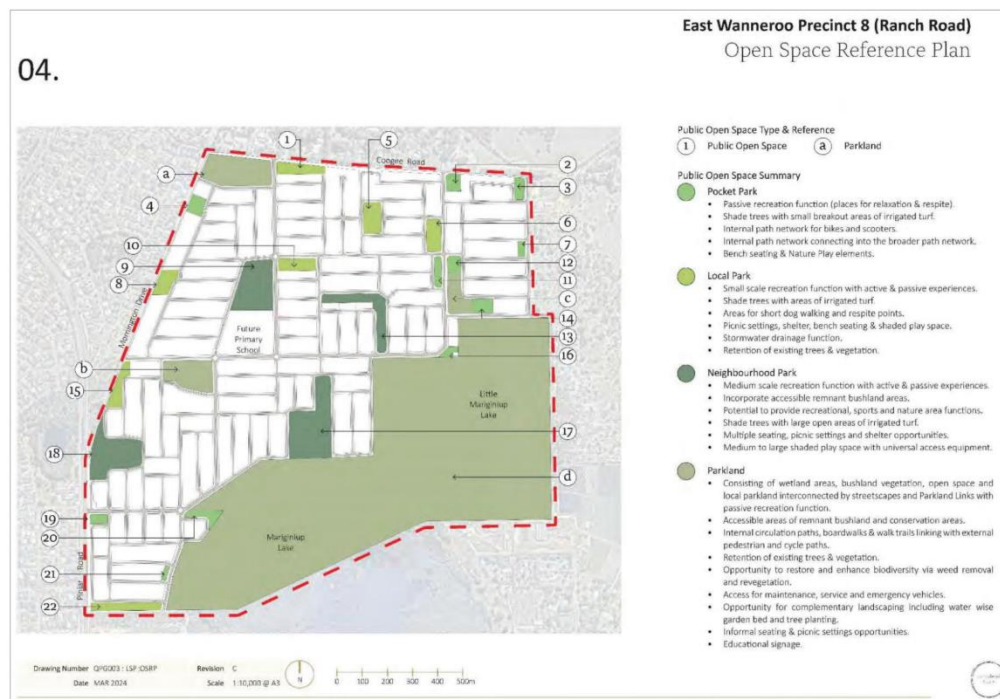
PRECINCT 8, EAST WANNEROO
BUSHFIRE MANAGEMENT PLAN

Figure 5: Open Space Reference Plan

2.2 VEGETATION CLASSIFICATION

Vegetation on and within 150 m of the Site were assessed during the site visit on 11 March 2023 using descriptions provided in Table 2.3 and Figure 2.4 of AS 3959:2018 and each vegetation class is discussed. The assessment was carried out using a combination of ground-level assessment and the use of a drone. The pre-development vegetation classifications for the Site are shown in Figures 6, 7, 8, 9, and 10, and collectively in Figure 11, with post-development classifications shown in Figure 12.

2.2.1 Patch 1: Class A Forest

Class A forest includes open forest with trees to 30 m and a 30% to 70% foliage cover, with many dominated by Eucalypts. It also includes pine plantations with trees reaching 30 m at maturity. Both forms of forest are present within Precinct 8 with some remnant pines present within Lot 21 Coogee Road (Figure 6), noting that those present within Lot 24 Coogee Road are sporadic with a grassy understorey and do not fit the general description of Class A Forest vegetation (Figure 6). Both patches of pine trees will be cleared to accommodate the subdivision.

Forest vegetation is also present around the perimeter of a wetland in Da Vinci Park across Pinjar Road to the west (Figure 6), and these trees will be retained into the future and contribute to the ongoing bushfire risk.



Figure 6: Class A Forest

2.2.2 Patch 2: Class D Scrub

Class D Scrub is dominated by scrub vegetation that is 2 to 4 m high and usually tends to have a continuous canopy from ground level into the tree crown; the occasional taller tree is also present within this vegetation class. This vegetation class is characteristic of the dominant vegetation across the Site with the potential to influence the bushfire hazard, namely the various patches of Banksia Woodland (Figure 7).



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PRECINCT 8, EAST WANNEROO
BUSHFIRE MANAGEMENT PLAN

Photo ID 5 — Pinjar Rd



Photo ID 6 — Ranch Rd

Figure 7: Class D Scrub**2.2.3 Patch 3: Class G Grassland**

Class G Grassland includes all forms, including pasture and cropland areas, along with locations where the occasional tree and/or shrub is present if the foliage cover is less than 10%, noting that it is considered for 50 m rather than the 100 m of other vegetation classes. Managed and unmanaged grassland estimated to be more than 200 mm is present across Coogee Rd to the north of Precinct 8, as well as within Little Mariginiup Lake (Figure 8). As grassland includes wetland vegetation such as sedges and rushes, it is also present around the perimeter of Lake Mariginiup; however, as this is surrounded by a band of shrubs it will have limited impact on BAL-ratings for proposed Lots (Figure 8).

BMP Precinct 8 East Wanneroo Final.docx

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BUSHFIRE MANAGEMENT PLAN

The *Wetland Buffer Assessment and Foreshore Strategy* (PGV Environmental, 2024b) indicates that rehabilitation of Lake Mariginiup and Little Lake Mariginiup (southern Parkland area) should focus on filling the gaps in existing vegetation, the core lake areas, and the bed of Little Mariginiup Lake without increasing the bushfire hazard levels for current and future residents. Based on current knowledge levels, it is likely that the current width of the wetland buffer along with the presence of perimeter roads around the development area is likely to be sufficient to ensure that the bushfire hazard will be consistent with that currently envisaged for the southern Parkland area.

Patch: 3 Classification or Exclusion Clause: Class G Grassland

Photo ID 7 — Coogee Rd



Photo ID 8 — Little Mariginiup Lake

Figure 8: Class G Grassland**2.2.4 Patch 4: Low-Threat Vegetation**

AS 3959:2018 indicates that there are several exclusion clauses that can be applied to vegetation patches in and within 100 m of the interest area that means they can be classified as low threat and will not contribute to BAL-ratings within a site. Of these, Clause 2.2.3.2 (f) allows exclusion of patches of vegetation that are low threat due to their flammability, moisture content, and/or fuel load, with examples including grassland managed in a minimal fuel condition, maintained lawns and gardens, landscaped parkland areas, market gardens, golf courses, and playing fields, for example. Low-threat vegetation present within Precinct 8 to which Exclusion Clause 2.2.3.2 (f) applies include (Figure 9):

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- Delamare Park along Nambi Pwy, Banksia Grove, and Castledene Park in Castledene Way, Tapping, to the west of Pinjar Rd.
- Market gardens within the Site boundary.
- Gardens and lawns associated with residential properties within and in proximity to the Site.

Patch: 4 Classification or Exclusion Clause: Exclusion Clause 2.2.3.2 (f)



Photo ID 9 — Delamare Park, Nambi Way

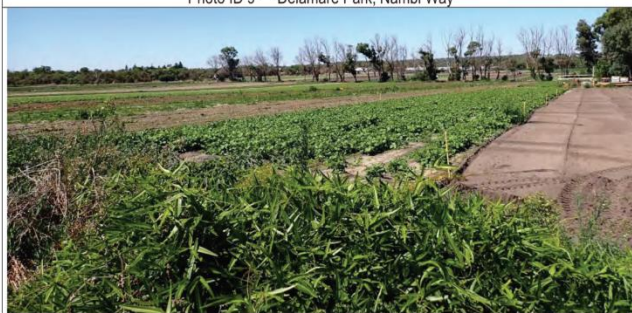


Photo ID 10 — Market gardens



Photo ID 11 — Garden, Coogee Rd

Figure 9: Low-Threat Vegetation

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PRECINCT 8, EAST WANNEROO
BUSHFIRE MANAGEMENT PLAN

2.2.5 Patch 5: Non-vegetated Areas

Non-vegetated areas are subject to exclusion clause 2.2.3.2 (e) of AS 3959:2018, and are present in the form of cleared areas and existing buildings, including (Figure 10):

- The presence of roads and footpaths within or in proximity to the site.
- Existing residences and buildings associated with market garden operations.
- Cleared areas.

Patch: 5 Classification or Exclusion Clause: Exclusion clause 2.2.3.2 (e)



Photo ID 12 — Ranch Rd



Photo ID 13 — Coogee Rd



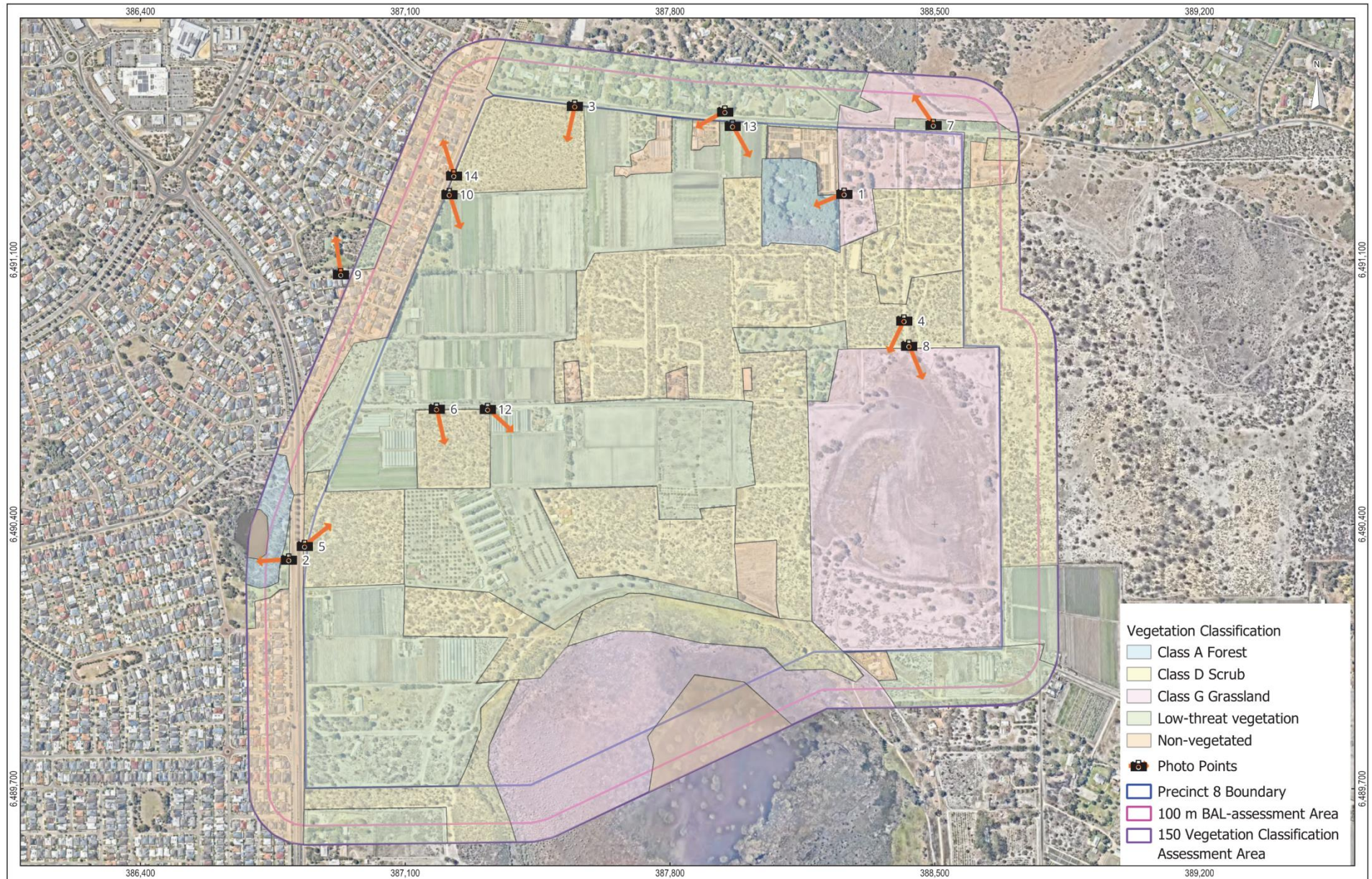
Photo ID 14 — Mornington Dr

Figure 10: Non-vegetated Areas

BMP Precinct 8 East Wanneroo Final.docx

14





Scale: 1: 9,000
 Original Size: A3
 Aerial Imagery: NearMap February 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)
 0 250 500 m

Precinct 8, East Wanneroo
 Local Structure Plan
 Qube Property Group

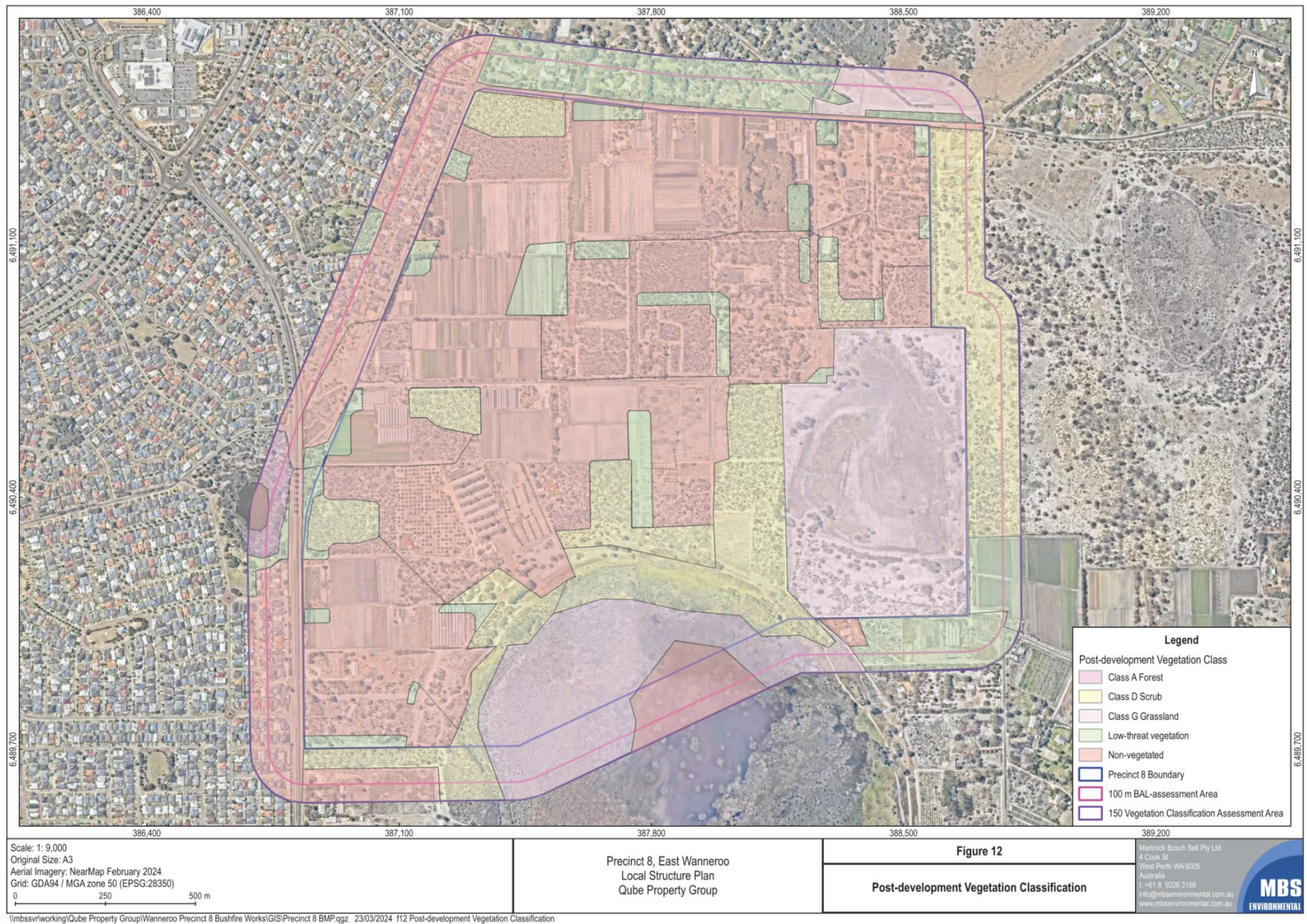
Figure 11

Pre-development Vegetation Classification
 as per AS 3959:2018

Martinek Bosch Sell Pty Ltd
 4 Cook St
 West Perth WA 6005
 Australia
 t: +61 8 9226 3166
 info@mbsenvironmental.com.au
 www.mbsenvironmental.com.au

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2.3 BUSHFIRE HAZARD LEVEL

2.3.1 Bushfire Hazard Assessment

Depending on the vegetation type, a hazard rating of low, moderate, or extreme is assigned as per the *Guidelines*. The nature of the vegetation in and around the development area means that the pre-development bushfire hazard rating ranges from Low to Extreme due to the presence of the Class A Forest and the Class D Scrub (Figure 13), with all locations within 100 m of vegetation patches with an Extreme bushfire risk having a Moderate bushfire hazard rating due to the increased risk in those locations. Other locations within and in proximity to the Site will have a low hazard rating if they are Grassland or located more than 100 m from any classified vegetation.

2.3.2 Fire Danger Index

The fire danger index (FDI) for the Site is FDI 80, as documented in Table 2.4.3 of AS 3959:2018, and which is the nominated FDI for Western Australia.

2.3.3 Potential Fire Impacts

Potential fire impacts within the Site include smoke and ember attack. A summary of the vegetation patches that will influence the BAL-ratings within the Precinct are provided in Table 1.

Table 1: BAL-analysis

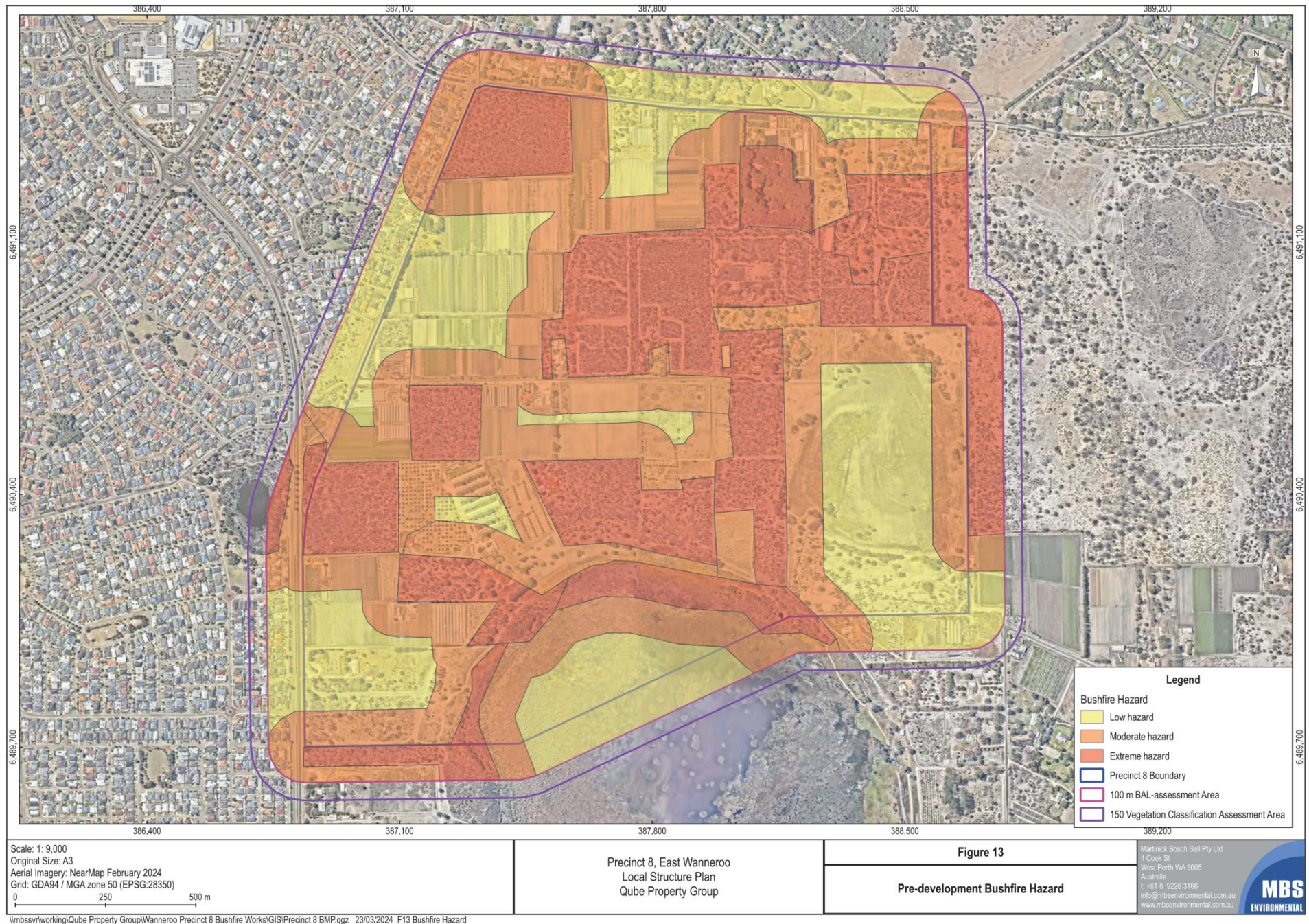
Patch	Vegetation Class	Slope	Distance (m)	Maximum BAL-rating
1	Class D Scrub	Upslope	16	BAL-29
		Downslope 0 – 5°	22	BAL-19
2	Class D Scrub	Downslope 0 – 5°	0	BAL-FZ*
3	Class D Scrub	Upslope	16	BAL-29
		Downslope 0 – 5°	22	BAL-19
4	Class D Scrub	Upslope	16	BAL-29
		Downslope 0 – 5°	16	BAL-40**
5	Class D Scrub	Upslope	48	BAL-12.5
6	Class D Scrub	Downslope 0 – 5°	16	BAL-29
7	Class D Scrub	Downslope 0 – 5°	16	BAL-29
8	Class G Grassland — North	Downslope 0 – 5°	20	BAL-12.5
	Class G Grassland — West	Downslope 0 – 5°	0	BAL-FZ***
9	Class G Grassland	Downslope 0 – 5°	15	BAL-19

* Note: this will be a temporary rating until Mariginiup Road to the immediate east is constructed, after which the maximum is expected to be BAL-29 or less.

** Note: this will be a temporary rating as it does not consider the width of the planned footpath around the edge of the POS, with the expected maximum BAL-rating to be BAL-29.

*** Note: this rating is applied as it extends into the rear of Lots adjacent to Little Mariginiup Lake, however, the depth of the Lots are likely to be sufficient to enable dwelling construction within a nominated building envelope outside the BAL-FZ/BAL-40 zones.

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2.4 BAL-ASSESSMENT

At this stage of the development process the design of the subdivision is limited to the delineation of indicative development cells rather than the identification of individual Lots. As a result, the BAL-assessment process is confined to identifying the extent of BAL-contours for the subdivision area and demonstrating that the bushfire risk can be managed. As the key vegetation that will influence BAL-ratings is the Class D Scrub that will be retained in various POS areas, including around Mariginiup Lake, along with the grassland within some areas of Little Mariginiup Lake. Each patch that will contribute to BAL-ratings is discussed. The indicative BAL-contour diagram for Precinct 8 is provided in Figure 14.

2.4.1 Patch 1 — Lot 5 Coogee Road

Lot 5 Coogee Road is vegetated with a patch of Class D Scrub, with the northern portion of this vegetation to be retained as a parkland area in perpetuity due to the environmental values associated with the Woodland present. The presence of this vegetation will result in an ongoing bushfire risk with BAL-ratings to be applied to Lots to the east and south, with a perimeter road providing sufficient separation distance to ensure a maximum BAL-29 rating.

2.4.2 Patch 2 — East of Lots 3 and 4 Coogee Road

Patch 2 is private property to the east of Lots 3 and 4 Coogee Road within the area that will be developed as Precinct 15 of the District Structure Plan. There is a stand of Class D Scrub along the boundary line that is located within the gazetted road reserve of what will become the extension of Mariginiup Road in time, with patchy vegetation in private property beyond that stand.

The vegetation within what will become the extension of Mariginiup Road represents an ongoing bushfire hazard for nearby Lots until the road is constructed, with Lots immediately adjacent to the road reserve currently located within the BAL-FZ/BAL-40 zones and thus not able to be developed in the shorter term. When the Class D Scrub is cleared, there will be a minimum of 22 m between the eastern Lot boundaries and any vegetation remaining in property to the east of the road reserve that may influence BAL-ratings.

2.4.3 Patch 3 — Lot 2 Ranch Road

Patch 3 is also Class D Scrub, of which approximately half will be retained as parkland area in perpetuity due to the environmental values associated with the vegetation that is present. The retained vegetation represents an ongoing bushfire risk to surrounding Lots to the north, east, south, and west. A perimeter road will be constructed around the parkland area ensuring a suitable separation distance is provided between the remnant bushland and future Lots to achieve a maximum BAL-rating of BAL-29 for closest Lots.

2.4.4 Patch 4 — Lot 39 Pinjar Road

Patch 4 is a Class D Scrub that will include areas of low threat vegetation to the north, south, and west in the vicinity of Pinjar Rd, and will include a footpath around the perimeter close to the perimeter road that will be constructed. The presence of the footpath and the perimeter road will ensure a maximum BAL-rating of BAL-29 for closest Lots.

2.4.5 Patch 5 — Lot 3 Pinjar Road

Patch 5 is Class D Scrub on land in private ownership to the immediate south of Lot 3 Pinjar Road. The construction of a local park that is landscaped in a manner that meets the definition of low threat vegetation along with a perimeter road between Lots and the POS will ensure that the maximum BAL-ratings for Lots facing the south will be BAL-12.5.

2.4.6 Patch 6 — Lot 5 Ranch Road

Patch 6 is the Class D Scrub located on a portion of Lot 5 Ranch Road, and which will be retained as native vegetation within a neighbourhood park. A perimeter road to the north and west, along with a landscaped area that will meet the definition of low threat vegetation to the east will ensure that the maximum BAL-ratings for Lots to the north, east, and west will be BAL-29.

2.4.7 Patch 7 — Mariginiup Lake Buffer

Patch 7 is primarily Class D Scrub along with some clearer patches that are present in the Mariginiup Lake Buffer zone around the perimeter of the lake body within:

- Lots 39, 42, 302, and 303 Pinjar Road.
- Lots 5, 6, 10, and 11 Ranch Road.
- Lot 11142 Ranch Road.

The Class D Scrub has been considered from a 'worst-case' scenario perspective assuming it extends to the Lot boundaries, thus allowing for future rehabilitation/restoration within the buffer zone and demonstrating that bushfire risk associated with the lake can be managed on an ongoing basis. The construction of a perimeter road around the buffer zone and the vegetation to be retained within Lot 5 demonstrates that the maximum BAL-rating for closest Lots will be BAL-29.

At present, the extent of restoration/revegetation within the wetland buffer zone has not been determined other than to indicate that it should not result in an increased bushfire hazard levels for existing and future residents (PGV Environmental, 2024b), and would be detailed in the foreshore management plan that would be developed in the future. Depending on the extent of revegetation within the buffer zone along with the presence of cleared areas and/or areas landscaped such that they meet the definition of low threat vegetation means that there is the potential for the separation distance between the classified vegetation and Lots to be increased, and thus BAL-ratings in nearby Lots could decrease.

2.4.8 Patch 8 — Little Mariginiup Lake

Patch 8 is the grassland associated with Little Mariginiup Lake within Lot 802 Mariginiup Road. This vegetation has also been treated as a 'worst-case' scenario assuming that it may not always be maintained in a minimal fuel condition and thus always considered low threat vegetation. The perimeter road that will be constructed to the north and west of the Mariginiup Road reserve will ensure that Lots will have a maximum BAL-12.5 rating, as will those in the western portion of Lot 801.

However, a planned residential cell to be constructed within the eastern portion of Lot 801 and to the immediate west of the most northwesterly portion of Lot 802 is immediately adjacent to grassland within Lot 802 and without a perimeter road, meaning that the BAL-FZ/BAL-40 zones extend into the rear of these Lots. There are several options for dealing with the increased bushfire risk at this location, including:

- Creating larger Lots that can accommodate a suitable setback from the rear Lot boundary and nominating an indicative building envelope that avoids the BAL-FZ/BAL-40 zones.
- Creating a low threat area as defined by AS 3959:2018 within that north-westerly portion of Lot 802 that would enable the entire extent of Lots to be built on.

It is recognised that restoration/rehabilitation will occur within the Little Lake Mariginiup bed, with the extent of those works yet to be defined in the proposed foreshore management plan. Depending on the extent of the proposed works, changes to the indicative BAL-ratings to the north and west of Lot 802 may need to be adjusted.

2.4.9 Patch 9 — Grassland North of Coogee Road

Patch 9 is grassland associated with the broader reserve of Lake Adams across Coogee Road to the north of Lots 3, 23, and 24. Adopting a 'worst-case' scenario approach in relation to this grassland as the ongoing management in a low-threat condition cannot be guaranteed, Lots abutting Coogee Road will have a maximum BAL-19 rating.

2.5 ASSET PROTECTION ZONE

The asset protection zone (APZ) for the Site is that area that provides the separation distance between the classified vegetation and building walls, with a preferred width of 100 m. For locations where a 100-m APZ width cannot be achieved, a reduced APZ can be implemented when a BAL rating is determined for the building, as is the case for some of the Lots that are the subject of this BMP. The reduced APZ commences at the junction of the BAL-40 and BAL-29 zones, or the junction of the orange and yellow zones shown in Figure 14, and will extend to the building walls as that is the point where the potential radiant heat impact of a bushfire does not exceed 29 kW/m². A suitable separation distance can be demonstrated for each of the Lots that will be created, indicating that the bushfire risk can be managed within the subdivision area.

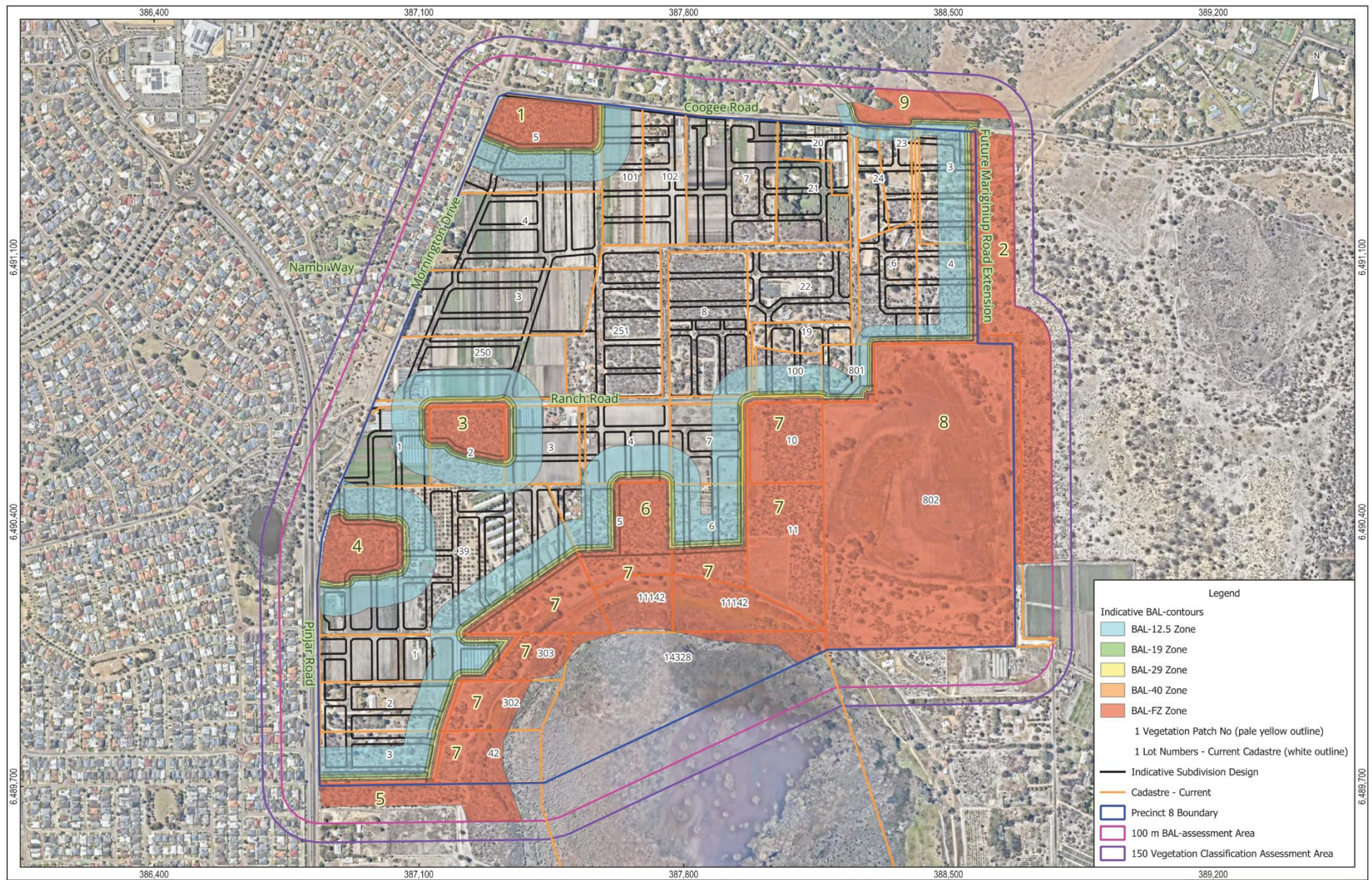
2.6 SHIELDING

Clause 3.5 of AS 3959:2018 allows for a reduction in the nominated construction standard for a building in bushfire prone area where the elevation is not exposed to the source of the bushfire attack, noting that the reduction in building standard cannot reduce below BAL-12.5. For Lots rated BAL-29 or BAL-19, elevations that are not exposed to the source of the bushfire attack may be reduced to BAL-12.5.

2.7 OTHER BUSHFIRE PROTECTION MEASURES

As the planning for the Site is high level planning that will inform the structure planning process, current bushfire protection measures will be limited and will change as approvals are achieved and designs evolve over time. At present, no bushfire protection measures are required for the Site other than those documented in this BMP.

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Scale: 1: 9,000
 Original Size: A3
 Aerial Imagery: NearMap February 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

0 250 500 m

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Precinct 8, East Wanneroo
 Local Structure Plan
 Qube Property Group

Figure 14

Indicative BAL-contours

Martinek Bosch Sell Pty Ltd
 4 Cook St
 West Perth WA 6005
 Australia
 t: +61 8 9226 3166
 info@mbsenvironmental.com.au
 www.mbsenvironmental.com.au

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2.8 RESPONSIBILITIES

During the early phases of the planning process, the responsibility for bushfire preparedness and response within the development area rests with Qube Property Group and its development partners.

2.9 IMPLEMENTATION

Implementation of this BMP will commence immediately and will be the responsibility of the Developer, Qube Property Group and its development partners for those land parcels that are under its control for installation and ongoing maintenance until Lots are eventually created and sold, and POS areas are ceded to the City of Wanneroo. Thus, in time, the Developer will be responsible for ensuring that Lot purchasers receive a copy of this BMP during the sale process. Activities that will be involved with the implementation of this plan are described in Table 2, which also includes an indication of maintenance responsibilities associated with each. As the planning process progresses, the implementation responsibilities will be adjusted to reflect the planning and development phase.

Note that when ownership arrangements change over time, the responsibility for the maintenance of fire management measures will devolve to the new owner or managing organisation, noting that landowners or managers are responsible for land under their direct control only. For example, Lot owners will be responsible for ensuring asset protection zones within their property are maintained. Activities that will be involved with the implementation of this plan are described in , which also includes an indication of maintenance responsibilities associated with a particular activity.

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BUSHFIRE MANAGEMENT PLAN

Table 2: Implementation Schedule

Item	Activity	Responsibility	Maintenance	Responsibility
1	The proposed subdivision design is reviewed at future planning phases to ensure the bushfire risk remains manageable.	Developer	As required at future planning phases and/or changes in the indicative design occur.	Developer
2	Hydrant design requirements will be in accordance with the Water Corporation Design Standard 63 for hydrants: <ul style="list-style-type: none"> Installation of markings to indicate the presence of hydrants, including: <ul style="list-style-type: none"> A blue 'cat's eye' reflective indicator in the centre line of the road. A small blue 'H' painted on the curbing. A white and red stripe around the pole nearest to the hydrant. Clearance on the placement of hydrants will be required from Department of Fire and Emergency Services (DFES) and the Water Corporation. Hydrants will need to be clearly identifiable, with markings installed by the developer prior to sign off. 	Developer	As required during various future planning approval phases.	Developer
3	The design and installation of roads will be in accordance with requirements specified in Table 6, Column 1 on page 76 of the Guidelines, with approval required from the City of Swan before installation can commence.	Developer	As required during various future planning approval phases.	Developer
4	When development of the Site progresses, either a 50 m low-fuel zone will be installed around active stages in the vicinity of Class G Grassland, or a 100 m low-fuel zone in the vicinity of Class D Scrub or Class A Forest to prevent temporary or higher BAL-ratings on Lots under construction.	Developer or owner/occupier as appropriate	As required to ensure the designated low-fuel zones remain in low-fuel state as defined by AS 3959:2018.	Developer
5	If required, undertake slashing of any long grass or other low vegetation to 100 mm and other weed control to reduce fuel load within any proposed POS areas and low-fuel zones.	Developer	As required to ensure the designated low-fuel zones remain in low-fuel state as defined by AS 3959:2018.	Developer
6	Comply with the City of Wanneroo's annual fire hazard reduction notice.	Developer	As per the requirements of the City of Wanneroo annual fire hazard reduction notice.	Developer

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BUSHFIRE MANAGEMENT PLAN

Table 4: Compliance with Bushfire Protection Criteria

Intent	Acceptable Solutions	Solution
Element 1: Location		
Ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.	A1.1 Development Location	
	<p>Bushfire hazard assessment is or will on completion be moderate or low.</p> <p>BAL-rating is BAL-29 or lower.</p>	<ul style="list-style-type: none"> The subdivision is in an area where the bushfire hazard level is manageable or will become so during later planning and development phases when activities expected to occur on land owned by others will facilitate the development of adjacent land within Precinct 8. The retention of vegetation within various Precinct 8 locations will mean that those Lots within 100 m of that vegetation will require a BAL-rating, with the maximum expected BAL-rating being BAL-29. Those Lots adjacent to the Mariginiup Road reserve will not be developed until the vegetation within the road reserve is cleared and suitable separation distance to ensure a maximum BAL-29 rating can be achieved. Lots adjacent to the most north-westerly portion of Little Mariginiup Lake are likely to be sufficiently large to enable a building envelope to be specified that avoids the BAL-FZ/BAL-40 zones of the Grassland to the east.
Element 2: Siting and Design of Development		
To ensure that the siting and design of development minimises the level of bushfire impact.	A2.1 Asset Protection Zone (APZ)	
	<p>Every habitable building is surrounded by, and every proposed lot can achieve an APZ depicted on plans that meets the following:</p> <ul style="list-style-type: none"> Width – bushfire radiant heat does not exceed radiant heat of 29 kW/m² (BAL-29) as measured from any external wall or supporting post or column in all circumstances. Location – APZ contained solely within the boundaries of the Lot on which the building is situated, except in instances where the neighbouring lot(s) will be managed in a low-fuel state on an ongoing basis, in perpetuity. 	<ul style="list-style-type: none"> The APZ coincides with the boundary between BAL-40 and BAL-29 zones (Figure 14) and includes roads and cleared areas. Subdivision design ensures width is suitable to ensure radiant heat does not exceed 29 kW/m² (BAL-29) as measured from any external wall or supporting post or column in all circumstances. Some Lots within the Site will have a BAL rating, with none expected to be higher than BAL-29 based on the current

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Intent	Acceptable Solutions	Solution
	<ul style="list-style-type: none"> Management – the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (Schedule 1 on page 71 of the Guidelines). 	design or the application of later planning measures (Section 2.4).
Element 3: Vehicular Access		
<p>Ensure that the vehicular access serving a subdivision/ development is available and safe during a bushfire event.</p> <p>To achieve the intent, all applicable acceptable solutions must be addressed:</p> <p>SP – Strategic planning proposal and structure plan where the lot layout is not known.</p> <p>Sb – Structure plan where the lot layout is known and subdivision application.</p> <p>Dd – Development application for a single dwelling, ancillary dwelling, or minor development.</p> <p>Do – Development application for any other development that is not a single dwelling, ancillary dwelling, or minor development.</p>	<p>A3.1 Public Roads (SP Sb Do)</p> <ul style="list-style-type: none"> Public roads are to meet the minimum technical requirements in Table 6, Column 1 on page 76 of the Guidelines. The trafficable (carriageway/pavement) width is to be in accordance with the relevant class of road in the Local Government Guidelines for Subdivisional Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area. <p>A3.2a Multiple Access Routes (SP Sb Do)</p> <p>Public road access is to be provided in two different directions to at least two different suitable destinations with an all-weather surface (two-way access).</p> <p>If the public road access is via a no-through road that cannot be avoided due to demonstrated site constraints, the road access is to be a maximum of 200 m from the subject lot(s) boundary to an intersection where two-way access is provided.</p>	<ul style="list-style-type: none"> Public roads associated with the planned subdivision area will be constructed in accordance with the technical requirements outlined in Column 1 of Table 5 on page 76 of the Guidelines and be consistent with those constructed in nearby locations. The design of the subdivision provides a range of two-way access options to the north, east, south, and west. Access/egress will be available to Coogee Road to the north, Mornington Drive and Pinjar Road to the west, and Mariginiup Road to the east when the extension through to Coogee Road is constructed. The presence of Lake Mariginiup constrains access to the south, with a perimeter road provided that will direct traffic to the west, north, and east. Planned exits to Mariginiup Road to the east may be temporary no-through roads (cul-de-sacs) until the construction of the extension through to Coogee Road is complete. The temporary cul-de-sacs that will eventually connect to Mariginiup Road are more than 200 m, however, only the first 100 m of those roads are located within areas that are rated BAL-12.5 or higher (Figure 14). The remainder of the road travels towards a suitable destination, with options available to the north and west.

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Intent	Acceptable Solutions	Solution
	<p>A no-through road may exceed 200 m if it is demonstrated that an alternative access way cannot be provided due to site constraints and the following requirements are met:</p> <ul style="list-style-type: none"> The no-through road travels towards a suitable destination. The balance of the no-through road that is greater than 200 m from the subject site is wholly within BAL-Low or is in a residential built-out area (Figure 23 on page 81 of the guidelines). 	<ul style="list-style-type: none"> As above – the no-through roads will be temporary no-through roads that will eventually connect to Mariginiup Road when it is constructed. Until Mariginiup Road is constructed, the length of those no-through roads will be more than 200 m, however, only the first 100 m of those roads are located within areas that are rated BAL-12.5 or higher (Figure 14). The remainder of the road travels towards a suitable destination, with options available to the north and west.
	<p>A3.2b Emergency Access Way (SP Sb Do)</p> <p>Where it is demonstrated that A3.2a cannot be achieved due to site constraints, or where an alternative design option does not exist, an emergency access way can be considered as an acceptable solution. An emergency access way is to meet all the following requirements:</p> <ul style="list-style-type: none"> Requirements in Table 6, Column 2 on page 76 of the guidelines. Provides a through connection to a public road. Be no more than 500 m. Must be signposted and if gated, gates must open the whole trafficable width and remain unlocked. 	<ul style="list-style-type: none"> Not required, emergency access will be via the planned internal road network. No-through roads will be temporary until the construction of Mariginiup Road to the east is completed.
	<p>A3.3 Through roads (SP Sb)</p> <p>All public roads should be through roads. No-through roads should be avoided and should only be considered as an acceptable solution where:</p> <ul style="list-style-type: none"> It is demonstrated that no alternative road layout exists due to site constraints, and The no-through road is a maximum length of 200 m to an intersection providing two-way access, unless it satisfies the exemption provisions in A3.2a. 	<ul style="list-style-type: none"> When the construction of Mariginiup Road to the east is complete, all roads within Precinct 8 will be through roads. The length of the temporary through-roads satisfies the exemption provisions of A3.2a.
	<p>A no-through road is to meet all the following requirements:</p> <ul style="list-style-type: none"> Requirements of a public road (Table 6, Column 1, Page 76). Turn-around area as shown in Figure 24 on page 81 of the <i>Guidelines</i>. 	<ul style="list-style-type: none"> The temporary no-through roads will be constructed in accordance with the requirements for public roads specified in the <i>Guidelines</i>, including the requirement for turn-around areas.

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Intent	Acceptable Solutions	Solution
	A3.4a Perimeter Roads (SP Sb) A perimeter road is a public road and should be provided for greenfield or infill development where 10 or more lots are being proposed, including as part of a staged subdivision, with the aim of: <ul style="list-style-type: none"> Separating areas of classified vegetation under AS 3959 that adjoin the subject site from the proposed lots, and Removing the need for battle-axe lots that back onto areas of classified vegetation. 	<ul style="list-style-type: none"> The subdivision design has included perimeter roads between classified vegetation and the Site. When constructed, Mariginiup Road to the east will act as a perimeter road between Precinct 8 and Precinct 15.
	A perimeter road is to meet the requirements contained in Table 6, Column 1 on page 76 of the <i>Guidelines</i> . A perimeter road may not be required where: <ul style="list-style-type: none"> The adjoining classified vegetation is Class G Grassland. Lots are zoned for rural living or equivalent. It is demonstrated that it cannot be provided due to site constraints. All lots have frontage to an existing public road. 	<ul style="list-style-type: none"> The perimeter roads will comply with the requirements specified in the <i>Guidelines</i>. Not applicable — a perimeter road has been planned for the Site.
	A3.4b Fire Service Access Route (SP Sb) Where proposed lots adjoin classified vegetation under AS 3959 (excluding Class G Grassland) and a perimeter road is not required in accordance with A3.4a, a fire service access route can be considered as an acceptable solution to provide firefighter access, where access is not available, to the classified vegetation. A fire access route is to meet all the following requirements: <ul style="list-style-type: none"> Requirements in Table 6 Column 3 on page 76 of the <i>Guidelines</i>. Be through-routes with no dead-ends. Linked to the internal road system at regular intervals, every 500 m. Must be signposted. No further than 500 m from a public road. If gated, gates must open the required trafficable width and be locked by the local government and/or emergency services, if keys are provided for each gate. Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 m. 	<ul style="list-style-type: none"> Not applicable — a perimeter road has been planned for the Site.

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Intent	Acceptable Solutions	Solution
	A3.5 Battle-axe Access Legs (Sb)	
	Where it is demonstrated that a battle-axe access leg cannot be avoided due to site constraints, it can be considered as an acceptable solution. There are no battle-axe technical requirements where the point of the battle-axe access leg joins the effective area of the battle-axe lot is less than 50 m from a public road in a reticulated water area.	<ul style="list-style-type: none"> Not applicable — Lot layout is yet to be determined.
	In circumstances where the above condition is not met, or the battle-axe lot is in a non-reticulated water area, the battle-axe access leg is to meet all the following requirements: <ul style="list-style-type: none"> Requirements in Table 6, Column 4 on page 76 of the Guidelines. Passing bays every 200 m with a minimum length of 20 m and minimum additional trafficable width of 2 m (i.e. the combined trafficable width of the passing bay and constructed driveway to be a minimum 6 m). 	<ul style="list-style-type: none"> Not applicable — Lot layout is yet to be determined.
	A3.6 Private Driveways (Dd Dc)	
	There are no private driveway technical requirements where the private driveway is: <ul style="list-style-type: none"> Within a lot serviced by reticulated water. No greater than 70 m in length between the most distant external part of the development site and the public road as measured as a hose lay. Accessed by a public road where the road speed limit is not greater than 70 km/h. 	<ul style="list-style-type: none"> Not applicable – Lot layout is yet to be determined.
	In circumstances where all the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following requirements: <ul style="list-style-type: none"> Requirements in Table 6, Column 4 on page 76 of the Guidelines. Passing bays every 200 m with a minimum length of 20 m and minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed driveway to be a minimum six metres). Turn around areas as shown in Figure 28 on page 86 of the Guidelines and within 30 m of the habitable building. 	<ul style="list-style-type: none"> Not applicable – Lot layout is yet to be determined.

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Intent	Acceptable Solutions	Solution
Element 4: Water		
<p>Ensure that water is available to enable people, property, and infrastructure to be defended from bushfire.</p> <p>To achieve the intent, all applicable acceptable solutions must be addressed:</p> <p>SP – Strategic planning proposal and structure plan where the lot layout is not known.</p> <p>Sb – Structure plan where the lot layout is known and subdivision application.</p> <p>Dd – Development application for a single dwelling, ancillary dwelling, or minor development.</p> <p>Do – Development application for any other development that is not a single dwelling, ancillary dwelling, or minor development.</p>	A4.1 Identification of Future Water Supply (SP)	
	<p>Evidence that a reticulated or sufficient non-reticulated water supply for bushfire fighting can be provided at the subdivision and/or development application stage, in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2 on Page 90 of the Guidelines.</p>	<ul style="list-style-type: none"> The subdivision is in an urban area and will be connected to scheme water.
	<p>Where the provision of a strategic water tank(s) is required in a suitable area within a road reserve or a dedicated lot the location should be identified on the structure plan to the satisfaction of the local government.</p>	<ul style="list-style-type: none"> Not applicable – the subdivision will be connected to scheme water.
	<p>A4.2 Provision of Water for Firefighting Purposes (Sb Dd Do)</p> <p>Where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority. Where these specifications cannot be met, then the following applies:</p> <ul style="list-style-type: none"> The provision of a water tank(s) in accordance with the requirements of Schedule 2 on page 90 of the guidelines. Where the provision of a strategic water tank(s) is applicable, then the following requirements apply: <ul style="list-style-type: none"> Land to be ceded free of cost to the local government for the placement of the tank(s). The lot or road reserve where the tank is to be located is identified on the plan of subdivision. Tank capacity, construction, and fittings provided in accordance with the requirements of Schedule 2 on page 90 of the Guidelines. A strategic water tank is to be located no more than 10 minutes from the subject site (at legal road speeds). <p>Where a subdivision includes an existing habitable building(s) that is to be retained, a water supply should be provided to this existing habitable building(s) in accordance with the requirements listed above.</p>	<ul style="list-style-type: none"> Not applicable – the subdivision will be connected to scheme water.

Intent	Acceptable Solutions	Solution
Element 5: Vulnerable Tourism Land Uses		
Provide for bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfire on property and infrastructure. All applicable acceptable solutions must be addressed.	Habitable buildings are sited and designed to: <ul style="list-style-type: none">Minimise clearing of existing vegetation.Provide hazard separation between classified vegetation and a development site that is managed in perpetuity to protect life, prevent the spread of, and manage the impacts of fire.	<ul style="list-style-type: none">Not applicable — urban subdivision is planned.
	Suitable access/egress is provided for users of tourism sites.	<ul style="list-style-type: none">Not applicable — urban subdivision is planned.
	Adequate water is available for firefighting purposes in the event of a bushfire.	<ul style="list-style-type: none">Not applicable — urban subdivision is planned.

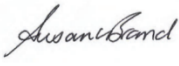


3.3 COMPLIANCE WITH RELEVANT DOCUMENTS

Sections 3.1 and 3.2 demonstrate how the development of Precinct 8 complies with State Planning Policy 3.7 (Department of Planning and WA Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (Department of Planning and the WA Planning Commission, V1.4, 2021). Site owners/occupiers must comply with relevant sections of the annual firebreak notice and bushfire information prepared by the City of Wanneroo, such as total fire ban and hazard reduction programs.

3.4 COMPLIANCE STATEMENT

This BMP has been prepared in accordance with the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (Department of Planning and Western Australian Planning Commission, 2015) and *Guidelines for Planning in Bushfire Prone Areas* (DPLH and WAPC, V1.4, 2021). The information contained in this document represents current site conditions based on a site visit on 11 March 2023 and associated planning.

Signed: 

Date: 28 March 2024

Accreditation Number: BPAD 36638

Accreditation Expiry Date: 30 April 2024



4. REFERENCES

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Attachment 4

Transport Impact Assessment





QUBE Property Group
Precinct 8, East Wanneroo

Transport Impact Assessment

October 2023

Project Code: 06784

PJA
Level 27
St Martins Tower
44 St Georges Terrace
Perth
WA 6000
Australia
pja.com.au

Version Control and Approval

Version	Date	Main Contributor	Issued by	Approved by
A – Draft	14 August 2023	LB, RD	RD	TJ
B – Final	31 October 2023	RD	RD	TJ

Prepared for

Rod Gardiner
Director
QUBE Property Group
Suite 3, Level 1
437 Roberts Road
SUBIACO WA 6008



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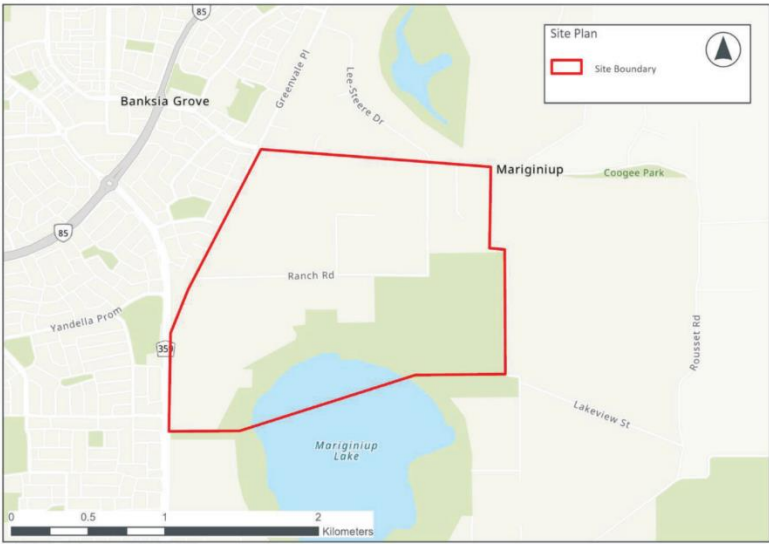


I Introduction

I.1 Introduction and Background

1.1.1 This Transport Impact Assessment (TIA) has been prepared by PJA on behalf of QUBE Property Group in support of a Local Structure Plan for a proposed residential-led development of approximately 2,500 lots and a primary school on land designated as Precinct 8 of the wider District Structure Plan for the proposed Urban Densification of East Wanneroo. Precinct 8 is largely located in the area of Mariginiup, which is a suburb located on the north-western outskirts of Perth.

Figure 1-1: Site Location Plan



I.2 Purpose of this Report

1.2.1 The *Western Australia Planning Commission Transport Assessment Guidelines* (WAPC Guidelines) sets out what level of assessment is necessary, based on the expected traffic impact of a proposed development. This specifies that where a development is forecast to generate more than 100 trips per hour in the peaks, a Transport Impact Assessment is required. Where this is not the case, a Transport Impact Statement (TIS) would suffice. A TIA has a greater focus on the external traffic impact resulting from the development.

1.2.2 Based on the proposed scale of development, the impact would be categorised as ‘high’ and a TIA would be required.

I.3 Transport Assessment Objectives

1.3.1 In line with the WAPC Guidelines, this TIA seeks to demonstrate that the proposed development would:

- “provide safe and efficient access for all modes;
- be integrated with the surrounding land uses;
- not adversely impact the surrounding land uses; and
- not adversely impact the surrounding transport networks or the users of those networks.”

1.3.2 This TIA considers all transport modes, including public transport, walking and cycling, as well as private motor vehicles, servicing and delivery vehicles.

I.4 Specific Issues

1.4.1 There are no specific transport issues that have been identified in relation to the proposed development. PJA have, however, ensured the items we feel are most pertinent have been addressed, such as:

- Access of the LSP to Pinjar Road located to minimise the impacts of the drainage system in the location.
- Limiting the East West attractiveness between the LSP and Pinjar Road via Nambi Parkway.
- The local structure plan movement network design uses Safe System thinking to encourage a walkable, rideable and attractive active transport environment with a view to encourage sustainable mobility.

I.5 Layout of this Report

1.5.1 The remaining chapters of this TIA cover the following:

- **Chapter 2** sets out details of the proposed Local Structure Plan.
- **Chapter 3** provides details of the existing situation.
- **Chapter 4** establishes the proposals for the internal transport networks.
- **Chapter 5** sets out changes proposed to external transport networks.
- **Chapter 6** demonstrates how the development will integrate with the surrounding area.
- **Chapter 7** analyses the internal transport networks.
- **Chapter 8** analyses the external transport networks.

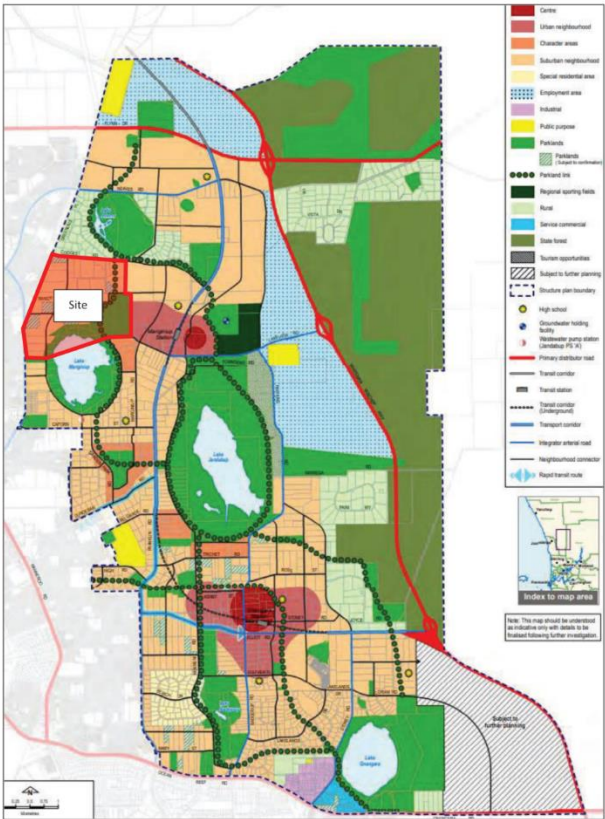
- Chapter 9 includes a review of safety issues.
- Chapter 10 concludes the TIA.

2 Local Structure Plan Proposal

2.1 Regional Context

2.1.1 The Local Structure Plan (LSP) covers Precinct 8 of the District Structure Plan (DSP) for East Wanneroo which is zoned as a suburban neighbourhood with some parklands and a parklands link connecting through this parkland. Figure 2-1 and Appendix A shows the layout the DSP, which was approved by the Minister for Planning in August 2021.

Figure 2-1: East Wanneroo District Structure Plan



Source: Department of Planning Lands and Heritage and WAPC, East Wanneroo District Structure Plan



2.1.2 The LSP area is bound by Lake Mariginiup reserves to the south, designated in the City of Wanneroo (CoW) District Planning Scheme No. 2 (DPS2) as an area for Parks and Recreation (under the Metropolitan Region Scheme Reserves), as well as land zoned as 'rural resource' which also currently occupies most of the LSP area. In CoW's DPS2, the site area is zoned as 'urban deferred' for the most part with some allocated as Parks and Recreation (under MRS Reserves). The site sits in the Central East Ward of the City of Wanneroo.

2.1.3 The site is bound to the north by Coogee Road and to the west by Mornington Drive which continues into the site area as it turns and becomes Ranch Road. Mornington Drive does not continue beyond this point along the site boundary. Further south-west of the site, Pinjar Road runs north-south along the boundary to the south-westernmost corner and the suburban area of Tapping is located further west. East of the site is mostly undeveloped agricultural and greenfield land, currently zoned as 'general rural' in the CoW District Planning Scheme.

2.2 Proposed Land Uses

2.2.1 The LSP proposal of 263 hectare area of land within the wider East Wanneroo DSP includes the following;

- Approximately 2,500 residential lots;
- Primary School;
- Public Open Space (POS) and Parkland; and
- Several access points across the site for vehicles and other modes to access the site.

2.2.2 The LSP site forms part of the central western area of the DSP and will directly abut the surrounding local area and existing highway network, particularly as one of the first phases to be built. Additional consideration will therefore be required to understand how this site will effectively tie into the existing local networks.

2.2.3 A plan showing the layout of the proposed LSP is provided at Appendix B.

2.3 Parking and the Medium Density Design Code

2.3.1 The WAPC *State Planning Policy 7.3 Residential Design Codes Volume 1* (R-Codes) refer to parking standards for new residential developments. Paragraph C3.3 states the minimum standards for plot ratio areas in Location A or B. Location A covers developments which are situated in close proximity to high frequency public transport services and Location B is all developments outside of those areas.

2.3.2 Location A – includes all land located within:

- 800m of a train station on a high-frequency rail route, measured in a straight line from the pedestrian entry to the train station platform to any part of a lot;
- 250m of a high-frequency bus route, or multiple bus routes that if combined have timed stops every 15 minutes during weekday peak periods (7–9am and 5–7pm), measured in a straight line from along any part of the bus route to any part of the lot; and/or
- the defined boundaries of an activity centre.

2.3.3 The centre of the LSP is currently located more than 800m from a train station and more than 250m from the nearest existing bus stops, the site would therefore be categorised as Location B. When the DSP is fully delivered, this may change with bus routes but the centre of the LSP will still be beyond the above distances to the future Mariginiup Station, approximately 2km to the east.

2.3.4 For residential dwellings in Location B, all one-bedroom dwellings will be allocated one parking space and all dwellings with 2 or more bedrooms will be allocated two parking spaces.

2.3.5 In Location B, dwellings less than 110sqm are required to have the minimum of at least 1.25 car parking spaces per dwelling. For dwellings equal to or larger than 110sqm, a parking standard of at least 1.5 spaces per dwelling is applied.

2.3.6 Visitor car parking is to be provided at a rate of 0.25 spaces per dwelling, equating to 625 visitor spaces across the LSP.

2.3.7 Based on the above, with 2,500 lots, the LSP could provide anywhere between approximately 625 spaces minimum (visitor only) to approximately 3,750 total. This upper value would be provided for by private garaging.

2.4 Cycling Facilities

2.4.1 Draft SPP 7.3 Medium Density Housing Code notes for single house and grouped dwellings, the minimum number of bicycle spaces is 1 per dwelling, plus 0.1 visitor spaces per dwelling if more than 10 dwellings.

2.4.2 Based on the above, each of the 2,500 lots should provide a space for parking for at least one bicycle in their home garages or store and 250 visitor spaces.



2.5 Deliveries and Servicing

- 2.5.1 The Main Roads WA Functional Road Hierarchy designates Mornington Drive and Coogee Road as Local Distributor (Rural, Non Built-Up Area), which is defined as connecting “...to other Rural Distributors and to Rural Access Roads. Not Regional Distributors, but which are designed for efficient movement of people and goods within regional areas Urban and Rural Local Distributor roads are managed by local government.”
- 2.5.2 Mornington Drive and Coogee Road connect via a 4-arm roundabout intersection at the north-western corner of the site with Tumbleweed Drive and Greenvale Place. Tumbleweed Drive is also categorised as a Local Distributor, which connects west to Joondalup Drive via a 4-arm roundabout intersection. Although, Tumbleweed Drive may better be defined by the Urban, Built Up Area definition of a Local Distributor due to the residential nature of the surrounding area, which refers to “...roads that carry traffic within a cell and link District Distributors or Primary Distributors at the boundary, to access roads. The route of Local Distributors should discourage through traffic so that the cell formed by the grid of higher order distributor roads, only carries traffic belonging to, or serving the area. Local Distributors should accommodate buses, but discourage trucks.”
- 2.5.3 Pinjar Road and Joondalup Drive are designated as District Distributor A, which is defined to “...carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. Much of the traffic will be personal vehicles with a small proportion of heavy vehicles making deliveries to the commercial centre. They are managed by Local Government.”
- 2.5.4 Access to Pinjar Road and Joondalup Drive for freight movements will be accommodated by the number and proximity of the network of street connections in the design. The anticipated type of servicing vehicles will be the weekly refuse collection vehicle and the occasional heavy rigid for furniture deliveries and semi-trailer during construction of dwellings in the LSP. This level of servicing provision is in line with the expected servicing demand at the site.

2.6 Specific Issues

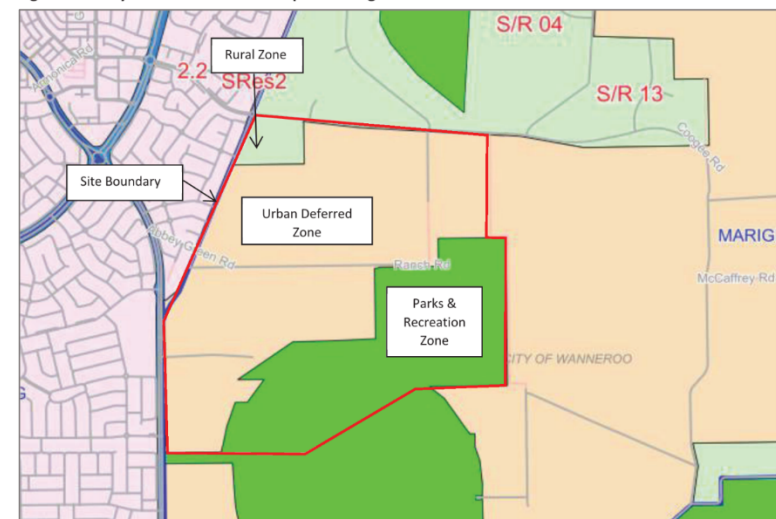
- 2.6.1 There are no specific transport issues that have been identified in relation to the proposed LSP but the items in Section 1.4 are noted.

3 Existing Situation

3.1 Existing (2023) Land Uses

- 3.1.1 The site is currently largely occupied by undeveloped, agricultural or greenfield land, some associated farm buildings, as well as a portion of the Mariginiup Lake at the southern end of the site and the entirety of the seasonal lake of Little Mariginiup Lake in the south-eastern corner. These lakes will be retained within the LSP, as shown in Appendix B.
- 3.1.2 The existing agricultural uses occupying the site are expected to generate some level of traffic in the existing scenario. All roads surrounding the site are local roads, under the control of the local authority.
- 3.1.3 The Metropolitan Regional Scheme for City of Wanneroo zones the site for the most part as ‘urban deferred’, with the area of lakes zoned as ‘parks & recreation’ and a small area in the north-western corner is zoned as ‘rural’. The East Wanneroo DSP refers to the change needed in the rezoning of these areas from ‘urban deferred or rural’ to ‘urban or industrial’ in the Metropolitan Regional Scheme, as well as to a ‘development zone’ under the DPS2. Figure 3-1 shows the context of the site in the City of Wanneroo Planning Map.

Figure 3-1: City of Wanneroo – Metropolitan Regional Scheme – Site Area



Source: City of Wanneroo, Online Mapping (<https://enterprise.mapimage.net/IntraMaps22B/?configId=ab754696-b230-4955-a588-975c4d34312a>)

Existing Situation

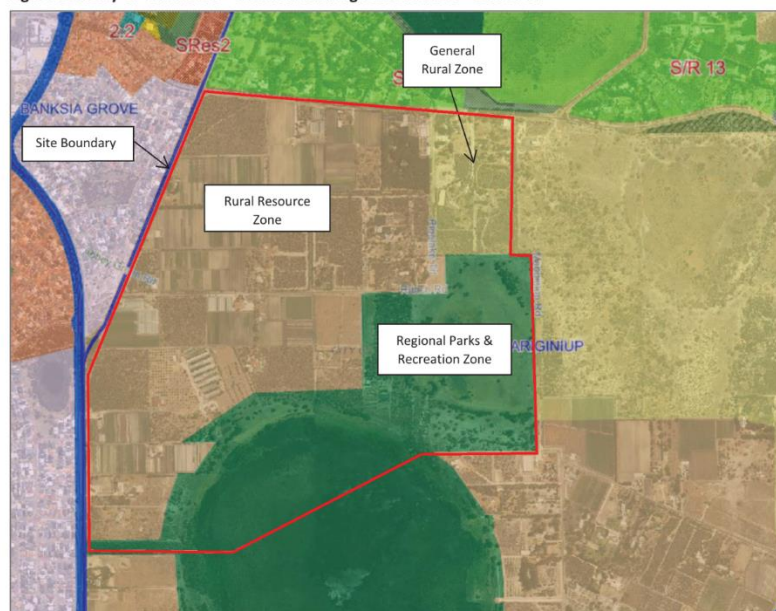


Existing Situation



- 3.1.4 Figure 3-2 shows the site area in the context of the DPS2 for the CoW. In this scheme, the site is zoned as 'rural resource' for the most part, with the lakes zoned as 'regional parks & recreation' and a small area in the north-east of the site zoned as 'general 'rural'.
- 3.1.5 As mentioned above, the areas zoned as 'rural' in the DPS2 will need to be rezoned to a 'development zone' under the DPS2, to make way for the upcoming East Wanneroo DSP development.

Figure 3-2: City of Wanneroo – District Planning Scheme No.2 – Site Area

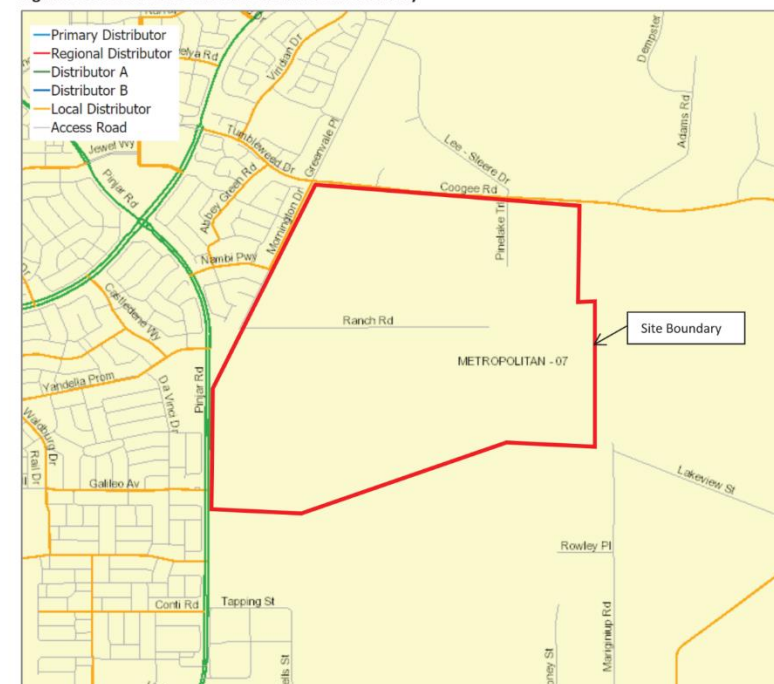


Source: City of Wanneroo, Online Mapping (<https://enterprise.mapimage.net/IntraMaps22B/?configId=ab754696-b230-4955-a588-975c4d34312a>)

3.2 Existing (2023) Road Network

- 3.2.1 Figure 3-3 shows the existing road network surrounding the LSP site.

Figure 3-3: Main Roads WA Functional Road Hierarchy



3.2.2 Source: Main Roads WA Road Information Mapping System
(<https://mrwebapps.mainroads.wa.gov.au/PublicMaps/RoadInformationMapping>)

Pinjar Road and Joondalup Drive

- 3.2.3 Pinjar Road and Joondalup Drive are both Distributor A Roads (Main Roads WA Road Hierarchy) and route broadly north-south past the western boundary of the site. Pinjar Road immediately bounds the western boundary of the site at the south-western corner. Joondalup Drive is somewhat removed from the immediate boundary, accessible via Pinjar Road or Tumbleweed Drive at the north-western corner of the site. Joondalup Drive and Pinjar Road meet at a large 4-arm roundabout intersection which is priority controlled and forms a key strategic route for the area.

Existing Situation



Existing Situation



- 3.2.4 Joondalup Drive forms part of State Route 85 which continues north into Neaves Road (Tourist Drive 359) and continues south through the areas of Banksia Grove, Tapping and Joondalup before terminating at Ocean Reef Road (State Road 84) via a signalised intersection.
- 3.2.5 Both Pinjar Road and Joondalup Drive are subject to a 70km/h speed limit. North of Tumbleweed Drive, Joondalup Drive is a single lane, two-way carriageway with kerbed central islands provided at intervals along this part of the route. South of Tumbleweed Drive, Joondalup Drive widens to a four-lane dual carriageway and features kerbed central islands throughout.

Coogee Road and Mornington Drive

- 3.2.6 Coogee Road and Mornington Drive are categorised as a Local Distributor Roads (Main Roads WA Road Hierarchy). Both are single lane, two-way carriageways with minimal separation or hatching between the two lanes.
- 3.2.7 Coogee Road is subject to a 60km/h speed limit with minimal residential or other minor accesses taken directly from the carriageway. While Mornington Drive is subject to a 50km/h speed limit, default for a built-up area, and provides direct access to residences. Coogee Road and Mornington Drive meet at a 4-arm roundabout intersection which is located at the north-western corner of the site, Tumbleweed Drive and Greenvale Place provide the other two approaches to the intersection.
- 3.2.8 East of the roundabout intersection, Coogee Road continues east adjacent to the northern boundary of the site. A link is provided from the eastern extent of Coogee Road via an informal intersection to Adams Road which eventually connects north to Neaves Road (State Route 85 and Tourist Route 359). Pinelake Trail also leads south from Coogee Road into the site area, via a priority intersection.
- 3.2.9 South of the roundabout, Mornington Drive provides access to residential dwellings and eventually becomes Ranch Road as the route turns into the site area.

Ranch Road and Pinelake Trail

- 3.2.10 Ranch Road and Pinelake Trail, both located within the site boundary, are classified as Access Roads in the Main Roads WA Functional Road Hierarchy. Both are subject to a 50km/h speed limit, default for a built-up area. Both carriageways are single lane, two-way carriageways with no markings or separation and are subject to the 'default' speed limit, 110km/h outside of built-up areas.

3.3 Existing Traffic Flows

- 3.3.1 Traffic count data has been obtained from Main Roads WA Traffic Map, where available and supplied by the City. The nearest available Main Roads count points are found at the Joondalup Drive / Pinjar Road roundabout intersection, SCATS data has also been sourced for this intersection between 21st-27th February 2022.
- 3.3.2 This count recorded that the Monday-Friday, two-way 5-day average (2020/2021) of vehicles moving through this intersection was 6,692 in the AM peak (08:00-09:00) and 6,825 in the PM peak, which was found to be 15:00-16:00 in this area. During the weekend period, the flows through this intersection were slightly less with 2,736 vehicles on the Saturday and 2,538 on the Sunday, both with a peak hour of 11:00-12:00. Table 3-1 shows the directional splits for each approach to the roundabout intersection, the two-way flows and the roundabout total across all approaches. Although the traffic experienced on this major route is likely to be higher than that found in the site area, this shows a representation of the baseline flows in the area.

Table 3-1: Current Traffic Flows (2020/2021) – Joondalup Drive / Pinjar Road Roundabout Intersection

Road	Direction	Weekday AM (08:00-09:00)	Weekday PM (15:00-16:00)
Joondalup Drive (North of Intersection)	NB	660	919
	SB	782	686
	Two-Way	1442	1,605
Joondalup Drive (South of Intersection)	NB	861	889
	SB	729	791
	Two-Way	1590	1680
Pinjar Road (East of Intersection)	EB	1346	1024
	WB	776	1041
	Two-Way	8186	8,635
Pinjar Road (West of Intersection)	EB	825	732
	WB	713	743
	Two-Way	17910	18,745
Roundabout Total		6692	6825

- 3.3.3 Mid-block data received from the City and obtained from the Main Roads traffic map are shown below summarised in Table 3-2.

Existing Situation



Existing Situation



Table 3-2: Current Mid-Block Traffic Flows

Road	Direction	Weekday AM (08:00-09:00)	Weekday PM (15:00-16:00)
Pinjar Road South of Joondalup Drive	NB	775	1,040
	SB	1,345	1,025
	Two-Way	2,120	2,065
	Daily Two-Way	22,587	
Nambi Parkway East of Abbey Green	Two-Way	145	145
	Daily Two-Way	1,605	
Mornington Drive North of Nambi Parkway	Two-Way	100	95
	Daily Two-Way	970	
Yandella Promenade east of Waldborg Drive	Two-Way	280	215
	Daily Two-Way	2,030	

3.4 Existing Pedestrian and Cycle Provision

- 3.4.1 The nearest dedicated pedestrian infrastructure to the site is along the western side of Mornington Drive (opposite the western site boundary), providing pedestrian access to the residential dwellings directly accessed from Mornington Drive. At the roundabout intersection between Mornington Drive, Coogee Road, Greenvale Place, Tumbleweed Drive, a single informal pedestrian crossing is provided across the Mornington Drive approach. Dropped kerbs are provided on both sides to access the crossing point, but no tactile paving or surfacing change separates pedestrians from the carriageway as the road surface continues into the crossing area. Additionally, the dropped kerb on the eastern side of the carriageway does not appear to connect into any formal footway provision, potentially creating a point of severance for pedestrians leaving the crossing. It would be recommended to tie this into the proposed pedestrian network for the site.
- 3.4.2 Pinjar Road at the south-western corner of the site has a good level of pedestrian and cycle infrastructure, which appears to have been provided in approximately the last three years, based on a desktop review. A bi-directional, segregated shared path is provided along the western side of Pinjar Road, commencing at the Joondalup Drive / Pinjar Road roundabout intersection and ending at the Pinjar Road / Tapping Street priority intersection. Although, at times this route does not cater to the pedestrian and cycle desire line taking them far from the most convenient route at intersections and navigating around large highway infrastructure such as large U-turn spaces.
- 3.4.3 Some informal pedestrian crossing points are provided with tactile paving and pedestrian refuges at intervals along the route. The tactile paving on these crossings is located in the centre of the pedestrian waiting area and does not cover the entire area which would increase safety for those with mobility impairments. However, these crossings are quite infrequent and do not offer protection for pedestrians crossing the carriageway which is known to experience high volumes of vehicular traffic, as shown in Table 3-1. Connections directly into this route from the site would be advised.
- 3.4.4 Other routes immediately surrounding the site such as Coogee Road, Pinelake Trail and Ranch Road do not cater for pedestrian and cycle movements separately from the carriageway. However, **bridal ways north of Coogee Road provide potential attractive walking routes to Banksia Grove Primary School and Lake Adams.**

Existing Situation



Proposed Internal Transport Networks



3.5 Existing Public Transport Provision

Bus

- 3.5.1 Bus stops are located west of the site on Pinjar Road, approximately 180-200m from the western extent of Ranch Road. These stops are served by the Route 390 service only. Stops on both sides of the carriageway are provided with a raised kerb to assist with boarding, seating and a post to identify the stop.
- 3.5.2 Route 390 provides a one-way route to Joondalup Station, operating approximately every 20-30 minutes, varying throughout the day with increased service at peak times. On weekends, the service is hourly.
- 3.5.3 In the other direction, Route 391 provides a service back towards the site, but this service takes a different route with the nearest stop to the site being in the Banskia Grove retail area on Jewel Way with a subsequent 30 minute walk to the LSP area.

Rail

- 3.5.4 Currambine (7.2km) and Joondalup Stations (8.6km) are the closest railway stations to the site, measured from the centre of the site. While Currambine Station is the closest station to the site by distance, the provision of large car parks and lack of access by bus, promotes the use of the private car to access this station from the site.
- 3.5.5 However, Joondalup Station is served by 19 bus services including Route 390 which accommodates access in close proximity to the site area. Thereby offering more sustainable transport opportunities to the station, in addition to the large Lakeside Joondalup Shopping City, university campus and employment destinations within walking distance of the station.
- 3.5.6 Both stations are on the Joondalup Railway Line and offer services in the direction of Elizabeth Quay Train Station in Central Perth and Butler Station, at the northern extent of Perth, as the two terminating stations. Services towards both terminating stations are provided approximately every 10 minutes. Currambine Station is located in Zone 4 and Joondalup is located in Zone 3, being closer to Central Perth.

4 Proposed Internal Transport Networks

4.1 Proposed Road Network

- 4.1.1 Several access points are proposed to allow the site to be permeable via all modes and well-integrated to the existing surrounding area, as well as to the future DSP. Each access will accommodate vehicular traffic, as well as pedestrian and cycle movements. These are as follows:

- Five vehicular accesses on the eastern side of Mornington Drive/Pinjar Road, along the western boundary, including the upgrades to Ranch Road;
- Two vehicular accesses on the southern side of Coogee Road, along the northern boundary, including the upgrades to Pinelake Trail;
- One vehicular accesses along the eastern boundary with an extension/formalisation of the existing Mariginiup Road;
- One vehicular access along the southern boundary with an onward connection to Pinjar Road and possible connections to the wider DSP south of the site; and
- A strong public open space green area and link in the south of the LSP area for pedestrians of all types on foot, on wheels or cycling.

- 4.1.2 The proposed road network within the LSP can be seen on the plan included as Appendix B, with a summary of the proposed roads set out in Table 4-1.

Table 4-1: Proposed Roads

Road	Road Reserve	Location Description	Liveable Streets Road Base Type
Pinelake Trail	22m	Form a NS connection between Ranch Road and Coogee Road	Neighbourhood Connector B
Ranch Road/EW NC	20-22m	Connects from the NS NC roadway through to the eastern boundary of the LSP and provides connectivity to other development to the east. The 20m road reserve is located north of Little Mariginiup Lake / South of the POS, near the eastern boundary of the LSP.	Neighbourhood Connector B
NS NC	22m	Connects from Coogee Road in the north through to the southern boundary of the LSP between Pinjar Road and Lake Mariginiup	Neighbourhood Connector B
EW NC to Pinjar Road	24m	Provides the main connection of the LSP from Pinjar Road to the NS NC	Neighbourhood Connector A
Local Streets	15m	These streets are form the typical residential streets within the LSP	Access Street C or D



- 4.1.3 Appendix A and B, respectively, show the planned road network within the East Wanneroo DSP and the LSP area between Pinjar Road, Mornington Drive and Coogee Road. At this stage, the DSP and LSP do not provide a detailed breakdown of the road types and designs that would be implemented but does recommend the layout of the routes. In the DSP, these are primarily linear routes leading north-south and will navigate through the key centres of the DSP at Mariginiup and Gngara.
- 4.1.4 The street types have been reviewed based on the *WA Liveable Neighbourhoods Update 02*, dated January 2009. Table 4-2 specifies the following for Access Streets and Laneways.

Table 4-2: Liveable Streets Road Specifications

Street Type	Max. Design Speed / Target Operating Speed (km/hr)	Indicative Volume (vehicles per day)	Indicative Street Reserve Width (metres)	Indicative Road Pavement Width (metres)
Access Street C – Wider Street	50/40	3,000	15.4	7.2
Access Street D – Narrow Yield or Give Way Street	50/30	1,000	14.2	6

** Lesser reserve widths and pavement widths may be applied over limited lengths where performance can be justified.

- 4.1.5 The Access Street D roads (Narrow Yield or Give Way Streets) are proposed with a 6m to 7.2m wide carriageway, as well as *at least* one footpath of 1.5m minimum width (but we should aim for 1.8m). In the few locations where the Road Reserve width is restricted to 12m, narrower verges will be provided. This road type has an indicative upper volume of 1,000 vehicles per day for 6m and up to 3,000vpd for the wider 7.2m wide pavement, and is effective in constraining vehicle speeds.

4.2 Intersection Controls

- 4.2.1 Due to the low volume and speed, residential nature of the LSP, access street intersections within the LSP are intended to be constructed as priority-controlled intersections. At intersections of the neighbourhood connectors in the LSPO, these are proposed to be controlled by single lane roundabouts.
- 4.2.2 The main entrances to the LSP area will be in the vicinity of Pinjar Road to Ranch Road and the route proposed to the south of Ranch Road, as well as the first access taken south of Coogee Road. This is given the proximity of these connections to the wider local road network and connections to key distributor roads such as Joondalup Drive and Pinjar Road. The design of these, and other connections across the site, will be considered in line the level of traffic forecast to use each access to ensure they are constructed as appropriate. Depending on the staging of delivery of the LSP, the final details of intersection control will be determined and may change from one stage to the next as traffic flows and intersection priorities changes.

4.3 Pedestrian and Cycle Network

- 4.3.1 Pedestrian and cycle connections will be provided throughout the site to connect internally and externally to create a good level of permeability to the wider area. Traffic free routes will also be accommodated within the site area, particularly in the public open space areas adjacent to Mariginiup Lake in the south of the site and other areas throughout the rest of the site. Dropped kerb crossings will be provided as appropriate, including at intersections.
- 4.3.2 Cyclists can either use the footpaths, or cycle on the quiet streets within the LSP if the speed of vehicles can be limited to 30km/h). Taking a Safe System approach, off-road shared paths or protected on-road cycle routes are proposed to be provided to encourage riding and not mixing with traffic, this for the neighbourhood connector road across the site.

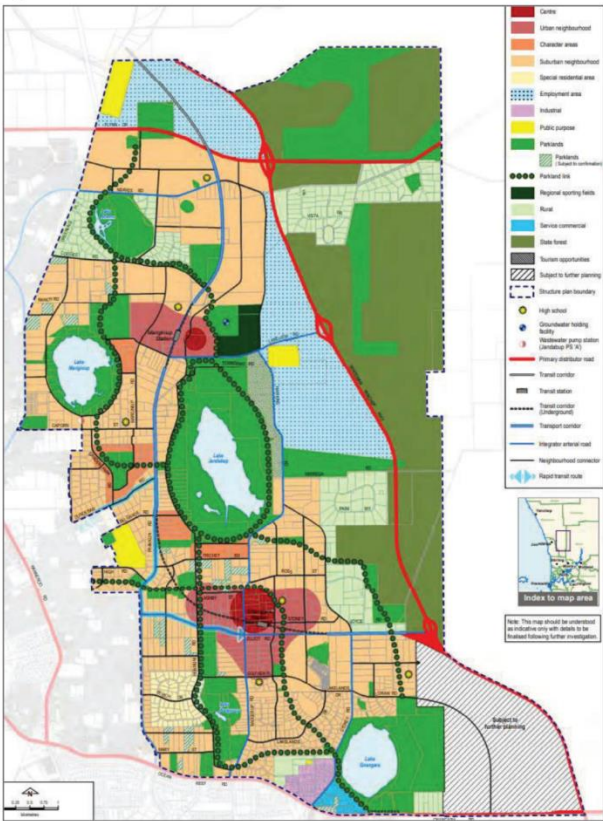
4.4 Public Transport Routes

- 4.4.1 Dedicated bus transit routes will not be provided within the LSP area, but within the wider DSP where key bus transit routes will be operating such as in other precincts of the DSP, notably east of the lakes. The provision of neighbourhood connector streets through the LSP will allow the use of these streets by bus serves if they just so happen to be routed through the LSP.
- 4.4.2 The DSP refers to bus services linking "...through neighbourhoods to transit stations and other key destinations in the surrounding locality. A rapid bus service route has been identified on the DSP map and on the Movement Network linking Wanneroo town centre with the Gngara district centre using Dundobar, Franklin, Elliott and Badgerup roads."
- 4.4.3 New rail services will be provided at two new stations within the DSP at the new urban centres of Mariginiup and Gngara. Mariginiup will be the closest station to the LSP offering genuine opportunities for future residents to travel by rail to key destinations for leisure, employment and other destinations.

5 Changes to External Transport Networks

- 5.1.1 Given the agricultural and greenfield nature of the site, the addition of the new intersections accessing the site along each boundary will create change to the local environment and as most of these access points are not currently present on the network.
- 5.1.2 As the East Wanneroo DSP develops around the LSP further road connections and transport infrastructure is expected to be delivered. As noted below in Figure 5-1 below, these elements are to be limited to eastern areas of the East Wanneroo DSP.

Figure 5-1: East Wanneroo DSP Transport Network



These are expected to include:

- Whiteman-Yanchep Highway
- Franklin Road Integrator Arterial
- Mariginiup Station
- Mariginiup Road Neighbourhood Connector

Nearer the LSP, Coogee Road to the north of the site is expected to be upgraded to a neighbourhood connector street in the future as development intensifies in the wider DSP. This road will provide an east to west link between the Franklin Road Integrator Arterial and Joondalup Drive.

Ranch Road through the LSP is expected to connect with the future Mariginiup Road neighbourhood connector as a T-junction and thus the Ranch Road route through the LSP is not expected to be highly attractive for non-local traffic.

Integration with Surrounding Area



Integration with Surrounding Area

6 Integration with Surrounding Area

6.1 Local Attractors / Generators

- 6.1.1 Given the proposed residential uses on the site, it is expected that the majority of the trips to / from the site will be generated towards places of education, employment, retail and leisure uses. Several retail and leisure destinations are available surrounding the site such as at Banksia Grove and Joondalup, as well as some wider employment uses in these areas.
- 6.1.2 For education trips, it is anticipated that a primary school will be provided within the LSP and several high schools will be provided within the wider DSP area. Externally from the LSP and DSP areas, Banksia Grove Primary School is located next to Peridot Park and just north of Tumbleweed Drive, within approximate 20-minute walk (1.6km) from the centre of the LSP. No internal commercial area is proposed, such as in the form of a neighbourhood centre.
- 6.1.3 In the wider DSP, urban centres are proposed surrounding the two rail stations at Mariginiup and Gngara which will provide a range of facilities for retail, leisure and other. It is also anticipated that other local centres will be provided throughout the DSP. At the eastern extent of the DSP, large areas of employment uses are also proposed, providing potential employment opportunities for residents in future.

6.2 Travel Desire Lines

Pedestrian / Cycling

- 6.2.1 To access the existing retail and employment area at Banksia Grove, pedestrians will be able to follow the footpaths provided in the residential area of Banksia Grove to the west of the LSP. These will offer quiet routes for pedestrians and cyclists to cycle on-carriageway. After leaving the residential area, pedestrians and cyclists will be able to cross Joondalup Drive using the dropped kerb and pedestrian refuge crossing. A short walk will then be required on a footpath to the Banksia Grove retail area. From the centre of the site, this will take circa 30 minutes. No dedicated infrastructure is provided for cyclists on this route and are therefore required to cycle on carriageway, however, quiet routes through the residential area are available.
- 6.2.2 For the Banksia Grove Primary School located north-west of the LSP, residents will be able to walk across Mornington Drive at the roundabout and continue on the footpath on the southern side of Tumbleweed Drive. Although, this use is expected to be minimal, given that a primary school is proposed to be provided within the LSP. Along Tumbleweed Drive, a dropped kerb and tactile paving crossing is provided to reach the northern side of the carriageway. From here, the footpath continues to the intersection with Viridian Drive, where pedestrians will follow the footpath north to the primary school. The school is also accessible via the bridal ways north of Coogee Road.

- 6.2.3 It is noted that the pedestrian and cycle links proposed with the East Wanneroo DSP are yet to be constructed and will provide improved connections to nearby destinations. For this LSP, the internal planned pedestrian and cycle provision is deemed acceptable.

Motor Vehicle

- 6.2.4 The site is located near Pinjar Road and Joondalup Drive which provide strategic distributor roads towards key destinations such as Joondalup and Central Perth. The construction of the LSP routes will provide connections to these routes for onward travel.
- 6.2.5 The strategic road network for the East Wanneroo DSP is yet to be constructed and will provide improved connections to nearby destinations when complete.

Public Transport

- 6.2.6 As discussed above, bus services are accessible on Pinjar Road and can be accessed via footpaths to be provided on Ranch Road and existing pedestrian infrastructure on Pinjar Road, including a bi-directional route and dropped kerb pedestrian crossings with tactile paving between the two bus stops.
- 6.2.7 The DSP is proposed to provide a Rapid Transit Route in the southern extent the area. The route will follow Dundee Road from Wanneroo Centre, along Franklin Road and Elliot Road towards the new Gngara Station and urban centre.

7 Analysis of Internal Transport Networks

7.1 Internal Road Network and Traffic Impact

- 7.1.1 Two-way, two-lane roads are proposed within the LSP to accommodate the anticipated traffic flows, as detailed previously in Section 4.1. The expected daily traffic flows, on the main neighbourhood connectors and other key streets are noted below in

Figure 7-1: Key Street Expected Traffic Flows



- 7.1.2 The internal streets main network should typically be Neighbourhood Connector B type streets with the exception of the higher volume sections from Pinjar Road to past the school site. This section should be a Neighbourhood Connector A street as traffic volumes are expected to exceed 3,000vpd. The short section of street near Pinjar Road has an expected traffic flow exceeding the upper 7,000vpd limit of a neighbourhood connector, but it is recommended that the side streets on this section be limited to left-in/left-out intersections, so as to minimise interruption of through traffic on the neighbourhood connector and reduce exposure to right angle crashes. As there is no direct fronting properties on this same section of street then there the on-street parking could be omitted, to further reduce the side friction and improve traffic flow.

- 7.1.3 Adequate sight distance is to be checked and provided at each intersection in subsequent stages of the project.

- 7.1.4 As detailed in Section 4.1, all intersections will take the form of priority intersections which can adequately accommodate the anticipated traffic flows. At key intersections, namely on the neighbourhood connectors, these intersections are recommended to be roundabouts.

- 7.1.5 This is especially important around the proposed school site. This will enable good traffic circulation around the school block in both directions. It will allow parent and carers to undertake U-turns safely to assist access and exit from the school and also reduce traffic circulating around the school.

7.2 Internal Pedestrian/Cycle Network

- 7.2.1 As the internal roads within the LSP are anticipated to have low volumes of traffic, with up to 147 two-way vehicle trips in both peak periods, it is considered that none of the proposed roads within the LSP would be difficult for pedestrians and cyclists to cross.

- 7.2.2 This is in line with Table 2 of the *WAPC Transport Impact Assessment Guidelines Volume 2*. This states that for a two-lane undivided road, which is what is proposed for the internal road network within the LSP, the ability of pedestrians to cross would only be affected if there are more than 1,100 vph.

7.3 Safe Walk/Cycle to School Assessment

- 7.3.1 As discussed above, there is proposed to be a primary school included within the LSP, and this will be within an 800m catchment of the entire LSP.

- 7.3.2 The walk and cycle routes to and from this school will be able to be provided by the local street network, using the footpaths to reach the primary school.

7.4 Pedestrian Permeability and Efficiency

- 7.4.1 The guidance set out within *Liveable Neighbourhoods* within Appendix 2, is not considered to be appropriate for the proposed LSP. While the site is located within a 5-minute walk of some amenities, the site is not located within a 5-minute walk of a local centre or a 10-minute walk of a train station. Therefore, the guidelines set out within the *Liveable Neighbourhoods* are not considered to be appropriate.
- 7.4.2 Although, the LSP is considered to be accessible for pedestrians with the Banksia Grove convenience facilities located closer to the LSP within a 10-minute walk including a store, health centre, food retail and community centre.
- 7.4.3 Overall, it is considered that the LSP is located within an accessible location, as some services are available within a less than 10-minute walk of key amenities and public transport services on Pinjar Road and a wider variety of facilities is available within a 30-minute walk at Banksia Grove.

8 Analysis of External Transport Networks

8.1 Scope of Assessment

- 8.1.1 Traffic surveys were undertaken at the following intersections in July 2023, provided at Appendix C, and these form the basis of this traffic impact assessment:
- 8.1.2 Based on an estimated delivery of 250 lots per annum and with an estimated 2,500 lots, the LSP is expected to be fully built out with dwellings constructed over an approximate 12 year period from commencement. With an estimated start date of 2024/25 it is expected that the LSP would be fully developed by approximately 2036. On this basis, the effect of the development traffic on the road network has been assessed as 2036. On that basis the following assessment period was examined:
- 2036 Future case (i.e. “with development”) operation of the subject intersections in SIDRA for equivalent design horizons for the purposes of comparison.

8.2 Proposed Residential Trip Rates and Generation

- 8.2.1 For the proposed residential use, PJA has adopted the following trip rates and generation based on the *WAPC Transport Impact Assessment Planning Guidelines (Volume 2: Planning Schemes, Structure Plans and Activity Centre Plans, , August 2016)*.
- 8.2.2 summarises the adopted trip rates and the resultant trip generation for the proposed LSP for the 2,500 proposed lots for the weekday AM peak (between 07:00-09:00) and PM peak (16:00-18:00) periods. In addition is the primary school in the LSP. This is expected to generate approximately 1,000 vehicle trips per day (based on a 650 student primary school with 1.5 trips per day per student) and all of these are expected to be trips to and from dwellings within the LSP, but these trips form part of the trips per dwelling and thus discount the LSP external trips.

Table 8-1: Weekday AM and PM Residential Peak Hour Trip Rates and Generation (WAPC Guidelines)

Time Period	Weekday AM Peak			Weekday PM Peak		
	In	Out	Two-way	In	Out	Two-way
Trip Rate (Residential, per dwelling)	0.2	0.6	0.8	0.5	0.3	0.8
Primary School	0.225	0.225	0.45	0.14	0.14	0.28
Trip Generation (vph)	350	1,350	1,700	1,160	660	1,820



8.2.3 From Table 8-1, in the AM peak hour 1,700 two-way trips (350 inbound, 1,350 outbound) predicted to be generated by the LSP and in the PM peak hour 1,820 two-way trips (1,160 inbound, 660 outbound) are forecast to be generated.

8.2.4 It should be noted that this flat rate has been applied to all dwelling types across the site for robustness and given alternative rates are not currently entertained in the WAPC Guidelines (we understand this is under review). Realistically, the vehicular trip rate per dwelling would be lower for medium density and vary from approximately 0.4/0.5 trips per dwelling for grouped dwellings (noting that no grouped dwellings are proposed nor likely to be developed) up to 0.8 for single detached residential dwellings, where more cars would be owned per household due to larger garages and proximity to on-street and driveway parking for the latter.

8.2.5 Given the scale of the LSP and that it is largely residential, it is expected that the majority of vehicle trips would be external. It is thus noted that the trip rate adopted will lead to a generation of double the expected trips and thus the assessment represents a very robust assessment. The effect of local trips to and from the primary school has been included above.

Directional Distribution

8.2.6 PJA has assumed that the site generated traffic will be distributed in similar proportions to that adopted from previous work undertaken by Uloth & Associates on this site in 2013. These proportions were:

- To/from SE 10%
- To/from NE 5%
- To/from Banksia Grove 15%
- To/from Joondalup Drive West 30%
- To/from Pinjar Road South 40%.

8.2.7 It is anticipated that through-traffic within the LSP would be limited, as the LSP is located along the edge of a residential area and does not provide a route between any key destinations. The eastern connectivity of Ranch Road to Mariginiup Road lies outside the future proposed DSP centre and train station. In discussion with DPLH, there was no DSP traffic modelling available to assess what impact the connection might have on traffic flows through the LSP. As a conservative estimate, it was assumed that in the order of 2,000vpd would be external though traffic across the site, entering from Pinjar Road and then using Ranch Road to access the eastern parts of the DSP, and vice versa.

8.3 SIDRA Analysis

8.3.1 The operation of each intersection has been analysed using SIDRA Intersection (Version 9). The key outputs of SIDRA are summarised below:

- **Degree of Saturation (DOS)** is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement.
- The **95th Percentile (95th %ile) Queue** represents the maximum queue length that can be expected in 95% of observed queue lengths in the peak hour.
- **Average Delay** is the delay time that can be expected over all vehicles making a particular movement in the peak hour.

8.3.2 The SIDRA results for the intersections for the estimated future volumes is presented in the tables below. The main connection of the LSP to the external road network is to be via Pinjar Road to the west and via Coogee Road to the north.

8.3.3 The geometry of the intersection with Pinjar Road included the following elements:

- 120m long Left turn slip lane under Give Way control on the Neighbourhood Connector
- Left turn slip lane under Give Way control on the Pinjar Road north approach designed to a High Entry Angle, slow speed approach.
- Right turn pocket on the Pinjar Road southern approach

8.3.4 Other options for this intersection were tested including Give Way controlled T-junction and a roundabout. These options were found to fail at various times and were not considered. The T-junction would fail soon after the opening of the LSP, whilst the roundabout option was found to fail by approximately 2041. This due to the heavy left turn movement from the LSP onto Pinjar Road. The traffic signals were stress tested and this option was found to be able to operate until approximately 2045 where traffic flows on Pinjar Road exceed the capacity of the traffic signals.



Table 8-2: New Pinjar Road Intersection Performance Summary

Lane	Performance Measure			
	Degree of Saturation (DoS)	Average Delay (s)	Level of Service (LoS)	95 th %ile Queue (m)
Pinjar Road/NCA Street – AM Peak (85s Cycle Time)				
Pinjar Rd S				
Th	0.42	3		63
RT	0.45	51		19
NCA Street				
LT	0.74	36		100
RT	0.74	52		32
Pinjar Rd N				
LT	0.01	19		1
Th	0.88	22		336
Intersection	0.88	20	C	336
Pinjar Road/NCA Street – PM Peak (70s Cycle Time)				
Pinjar Rd S				
Th	0.66	5		122
RT	0.87	46		89
NCA Street				
LT	0.17	14		20
RT	0.20	39		8
Pinjar Rd N				
LT	0.06	16		5
Th	0.88	29		233
Intersection	0.88	19	B	233

Access to the LSP is also expected to be gained via Nambi Parkway where it intersects with Pinjar Road south of Joondalup Drive. Approximately 10% of the LSP traffic was expected to use Nambi Parkway in an initial layout of the LSP with multiple accesses onto Mornington Drive. Current traffic flows provided by the City from 2022 indicates that approximately 1600vpd use Nambi Parkway. The LSP demand to use Nambi Parkway was estimated at approximately 1,900vpd, thus there was expected to be a total of approximately 3,500vpd using Nambi Parkway. In its present format Nambi Parkway is estimated to have a traffic carrying capacity of approximately 4,000 to 5,000vpd. The assessment of the performance of the intersection of Nambi Parkway and Pinjar Road for this scenario is summarised below in Table 7-2.

Table 8-3: Nambi Parkway Intersection Performance Summary (AM Peaks)

Lane	Performance Measure			
	Degree of Saturation (DoS)	Average Delay (s)	Level of Service (LoS)	95 th %ile Queue (m)
Pinjar Road/Nambi Parkway – AM Peak (Current 2023 Flows)				
Nambi Parkway				
LT	0.15	8		4
RT	0.26	14		6
Pinjar Rd N				
LT	0.02	7		1
Th	0.43	0		0
Pinjar Rd S				
Th	0.26	0		0
RT	0.11	20		2
Intersection	0.43	2	NA	6
Pinjar Road/Nambi Parkway – AM Peak (2036 Flows with no LSP)				
Nambi Parkway				
LT	0.21	11		6
RT	0.51	31		12
Pinjar Rd N				
LT	0.02	7		1
Th	0.56	0		0
Pinjar Rd S				
Th	0.34	0		0
RT	0.23	34		5
Intersection	0.56	3	NA	12
Pinjar Road/Nambi Parkway – AM Peak (2036 Flows with LSP)				
Nambi Parkway				
LT	0.33	12		10
RT	0.84	52		29
Pinjar Rd N				
LT	0.02	7		1
Th	0.56	0		0
Pinjar Rd S				
Th	0.34	0		0
RT	0.29	35		6
Intersection	0.84	6	NA	29

From the above assessment summary, it can be seen that the critical right turn from Nambi Parkway is close to capacity in 2036 when the LSP traffic flows are considered. Delays for this movement are expected to be approximately 52s. This is slightly higher than the WAPC threshold of 45s for an individual movement, but the approach has delays of approximately 30s, this less than the 35s threshold. Beyond 2036, these delays are expected to worsen as traffic flows for the right turn begin to exceed its capacity (this being a practical degree of saturation of 0.80 for sign control).

Based on the above findings, the initial LSP layout was then modified so that street connections of the LSP to Mornington Drive were limited, this to also limit the amount of LSP traffic on Nambi Parkway. On this basis a resultant 50% drop in LSP traffic on Nambi Parkway will result in delays to right turn traffic of approximately 37s with a DoS of 0.68, these now below WAPC thresholds.

Road Safety

- 8.3.5
- The low level of traffic generated by the proposed LSP and the expected acceptable levels of delays exiting or accessing the site directly from the frontage roads is not anticipated to worsen the existing relatively low-level crash history. The adoption of traffic signals for the Pinjar Road entry will make this access relatively safe, compared to an uncontrolled T-junction.

8.4 Analysis of Pedestrian / Cycle Networks

- 8.4.1
- Table 2 of the WAPC Guidelines Volume 2 has been reproduced below.

Table 8-4: Traffic Volumes Affecting Pedestrian Crossing Amenity

Road Cross-Section	Traffic Volume Affecting Ability of Pedestrians to Cross (vehicles per hour – two-way)
2 lane undivided	1,100 vph
2 lane divided (or with pedestrian refuge islands)	2,800 vph
4 lane undivided (without pedestrian refuge islands)	700 vph
4 lane divided (or with pedestrian refuge islands)	1,600 vph

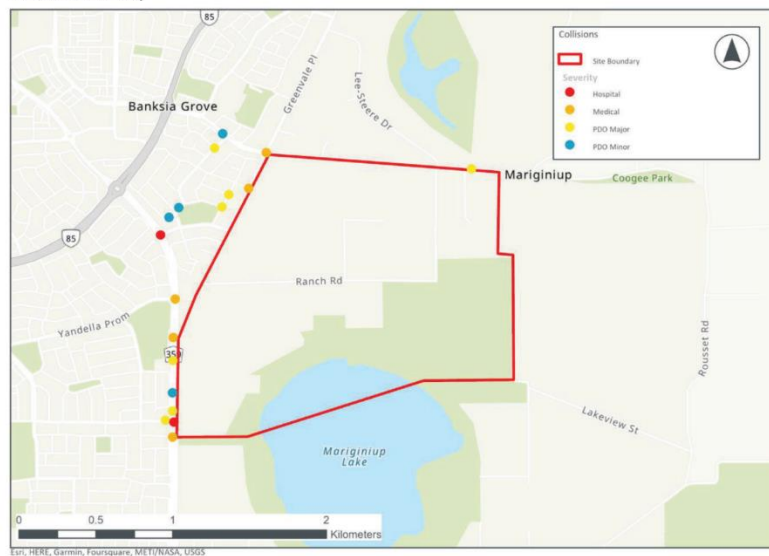
- 8.4.2
- This states that for a two-lane divided road, as is the case for the proposed neighbourhood connector connecting to Pinjar Road, the ability of pedestrians to cross would only be affected if there are more than 2,800 vph. This section of road is expected to carry approximately 760vph.
- 8.4.3
- Other streets within the LSP are expected to have traffic flows generally less than this and expected to be significantly less than the 1,100vph threshold for a 2-lane undivided street. Thus, all streets within the LSP will not require to have treatments installed to assist pedestrians crossing the streets picking gaps in traffic.

Safety Issues

9 Safety Issues

- 9.1.1 Crash history has been reviewed from the Main Roads WA Crash Information map on streets in the vicinity of the development site. Crashes in the vicinity of the site were identified and the locations of which are shown in Figure 9-1.

Figure 9-1: Location of Crashes (worst rated collisions in each location shown where more than one collision recorded)



- 9.1.2 The crashes in Figure 9-1, are summarised in Table 9-1.

Table 9-1: Crash Summary

Location	Date, Time	Severity	Accident Type	Event Type	Other Involvements
Coogee Road	07/03/2021, 15:15	PDO Major	Sideswipe same direction	Involving overtaking	2 x cars
Coogee Road, Tumbleweed Drive, Mornington Drive & Greenvale Place	07/06/2019, 08:45	PDO Major	Right angle	N/A	2 x cars
	23/08/2021, 16:15	Medical	Right angle	N/A	N/A
Sundowner Meander & Mornington Drive	18/07/2019, 13:20	Medical	Right angle	N/A	2 x cars
Tumbleweed Drive	12/07/2018, 18:50	PDO Minor	Hit object	N/A	N/A
Abbey Green Road & Tussock Elbow	13/07/2019, n/a	PDO Major	Hit object	N/A	1 x car
Kandalee Gate & Cyandra Loop	26/01/2019, 23:56	PDO Major	Hit Object	N/A	1 x car
	26/01/2019, n/a	PDO Major	Hit object	Entering / leaving driveway	1 x car
Kandalee Gate & Winona Link	14/04/2021, 17:35	PDO Major	Rear end	N/A	1 x car
Abbey Green Road	03/06/2017, n/a	PDO Minor	Hit object	N/A	N/A
Sundowner Meander	08/02/2017, 20:00	PDO Minor	N/A	Involving parking	1 x car
Pinjar Road & Nambi Parkway	13/08/2017, 19:15	PDO Major	Rear end	Involving overtaking	1 x car
	26/02/2018, 19:00	PDO Minor	Rear end	N/A	2 x car
	04/09/2019, 17:30	PDO Major	Hit object	N/A	1 x motorcycle, 1 x car
	26/08/2021, 15:00	PDO Minor	Right angle	N/A	2 x car
	26/02/2021, 21:10	Hospital	Right turn thru	N/A	3 x car
Pinjar Road & Yandella Promenade	22/03/2018, 08:20	PDO Major	Right turn thru	N/A	1 x motorcycle, 1 x car
	01/06/2018, 16:00	Medical	Rear end	N/A	1 x car
	10/08/2018, 05:50	Medical	Right angle	N/A	1 x car
	06/08/2019, 16:20	Medical	Rear end	N/A	2 x car
Pinjar Road	23/03/2017, 05:50	PDO Major	Rear end	Entering / leaving driveway	2 x car
	02/07/2019, 18:00	PDO Minor	Sideswipe same direction	Involving overtaking	2 x car
	19/09/2019, 08:50	Medical	Rear end	N/A	2 x car
	29/11/2019, 14:45	Medical	Rear end	N/A	3 x car
	29/04/2020, 15:30	PDO Major	Sideswipe same direction	Involving overtaking	1 x car
Pinjar Road & Galileo Avenue	31/03/2017, 19:30	Hospital	Rear end	N/A	1 x truck, 1 x car
	08/05/2019, 09:00	Medical	Rear end	N/A	2 x car
	07/04/2021, 07:00	PDO Major	Rear end	N/A	2 x car
Galileo Avenue	10/03/2018, 18:30	PDO Major	N/A	Involving parking	2 x car

*Source: <https://portal-mainroads.opendata.arcgis.com/>



- 9.1.3 Across the study area there were 29 crashes recorded across the last five years to December 2021 of which two were Hospital, eight were Medical, 13 were Major Property Damage and six were Minor Property Damage. There were no crashes involving pedestrians or cyclists; one crash involved a truck; and two crashes involved a motorcycle. The most commonly crash type was 'rear end' (11) followed by 'right angle' crashes and 'hit object' (five each).
- 9.1.4 There are three intersections with Pinjar Road where there were three or more crashes over the last five years: with Nambi Parkway (5), with Yandella Promenade (4) and Galileo Avenue (3).
- 9.1.5 At the intersection of Pinjar Road and Nambi Parkway, one crash was Medical, two were Major Property Damage, and two were Minor Property Damage. At the intersection of Pinjar Road and Yandella Promenade, three crashes were Medical, and one was Major Property Damage; all crashes took place in 2018 and 2019, involving rear end or right turn crashes. Three rear-end crashes occurred at the intersection with Galileo Avenue (one Hospital, one Medical and one Major Property Damage).
- 9.1.6 Pinjar Road was upgraded to a four-lane dual carriageway between Blackberry Drive and Joondalup Drive in 2018/2019. The 2.5km stretch of road covers five intersections (including the three mentioned above), with improved provision for right turn vehicles and through moving traffic using separate lanes. This has shown to have improved the capacity and safety of Pinjar Road, where the number of crashes has decreased.

10 Summary and Conclusion

- 10.1.1 This TIA has been prepared by PJA on behalf of QUBE Property Group in relation to a proposed residential Local Structure Plan within the wider East Wanneroo DSP. The LSP proposals include the following;
- Approximately 2,500 residential lots;
 - Primary School;
 - Public Open Space (POS); and
 - Several access points across the site for vehicles and other modes to access the site.
- 10.1.2 The proposals are forecast to generate 2,000 two-way residential vehicle trips in both the weekday AM and PM peak periods, based on WAPC trip rates. Modelling has shown that the additional traffic expected to be generated by the LSP will be able to use the adjacent road network with the introduction of traffic signals at the main access on Pinjar Road.
- 10.1.3 The site will connect well to surrounding pedestrian and cycling provision via the strong links provided through the site north-south and east-west. Residents and visitors to the site will benefit from frequent bus services on Pinjar Road and from the future bus services and rail stations to be provided in the DSP.
- 10.1.4 Based on the Medium Density Design Codes, the LSP could provide a minimum of 625 car parking spaces for visitors. The new codes respect that if there are good public transport provisions nearby, there is no need for car ownership. Similarly, each of the 2,500 lots should provide a space for parking for at least one bicycle in their home garages/store plus 250 visitor spaces.
- 10.1.5 The site provides a sustainable opportunity for development, providing residential dwellings in close proximity to high frequency bus services to/from rail transport opportunities, reducing the demand for private vehicle usage and increasing patronage to local amenities.
- 10.1.6 This Transport Impact Assessment has been prepared in accordance with the *WAPC Transport Impact Assessment Guidelines Volume 2*, the completed checklist is provided at Appendix D.



Attachment 9

Sense of Place Statement



Precinct 8, East Wimmeroo

Local Sense of Place Statement

A Local Sense of Place ('LSoP') has been prepared for Precinct 8, reflective of the vision and aspirations for the precinct as set out by the East Wimmeroo District Sense of Place Statement ('DSOPS') and the East Wimmeroo District Structure Plan ('EWDSP').

The East Wimmeroo DSOPS identifies the following principles and local priorities for East Wimmeroo –

- Environmental value and connection
- Wetland, lake and parkland links
- Variety of lifestyle choices
- Sustainable communities
- Ecologically sensitive design
- Build on foundation of equestrian, market garden, European and Aboriginal heritage values.

These principles and priorities are reflective of the established identity and future character aspirations for Precinct 8 which include-



Established Identity

Precinct 8 benefits from its elevated location above Mariginiup Lake and Little Mariginiup, which together with its pockets of remnant vegetation create a strong sense of place that is further enriched by its Aboriginal Cultural Heritage. The name Mariginiup means "to pull out flag leaved flax" and translates as a place for food gathering. The importance of food is further signified by the historical agricultural land uses and market gardening activities that have taken place within the locality. Other rural land uses have also left their mark with equestrian activities providing a network of bridal ways north of the Precinct. These bridal ways further add to the distinctiveness of Mariginiup and Precinct 8, providing unique connections to Lake Adams to the north and to the commercial and community activities within Banksia Grove to the west of the precinct.



Future Characteristics

Development within Precinct 8 should seek to celebrate its well established and highly attractive identity through the retention of existing vegetation and topography whilst strengthening connections to the wetlands both, within and surrounding the Precinct. Consistent with the East Wimmeroo DSOPS and the development objectives set out by the EWDSP for Precinct 8 as a 'suburban neighbourhood', the development of Precinct should seek to respond and celebrate to the following attributes:



Protect and Connect to Environmental Assets

Perhaps more than any other environmental feature, the local sense of place within Precinct 8 is defined by Mariginiup Lake and Little Mariginiup Lake. These shallow circular wetlands are surface expressions of the underlying unconfined aquifer that give East Wimmeroo much of its uniqueness and identity.

While these wetland systems are protected as 'Parks and Recreation' reserves, they will require ongoing and sensitive management to ensure the protection. The management of these lakes and their foreshores should seek to seek to maintain and restore their environmental value whilst also providing strong connectivity to the emerging community. The re-establishment of ecological and social connectivity to Lake Adams and the broader lake system within East Wimmeroo should also be a priority.

Pockets of native vegetation further complement the wetlands to ultimately create a sense of place that is deeply attached to and enriched by the natural environment. The retention of native vegetation and significant trees, together with the landscaping of streets and open spaces will be important to establishing environmental linkages, provide habitat whilst also offering shade.

Topography will remain an important feature of the Precinct, both for the retention of native vegetation, but also for maintaining the Precinct's distinctive viewing corridors towards Mariginiup Lake and the distant ridge line to the south.





Celebrated Cultural Heritage

Aboriginal Cultural and European heritage strengthen the sense of place and local identity that exists within Precinct 8. Aboriginal Cultural Heritage is strongly linked to the wetlands with two identified cultural heritage sites located within the Precinct, Lake Mariginiup and Lake Mariginiup Scarred Tree. Whilst these sites are located with Regional Reserves to ensure their protection, opportunities for story telling celebrating the landscape and its heritage should be embedded within the public realm through design, interpretive signage and street naming. Similarly, opportunities to celebrate the Precincts heritage as an important source of food for both traditional custodians and more recently through farming and market gardening should be reflected in the emerging community and its built environment.



A Sustainable Community

As the EWDSOPs notes, as a historically rural area, there are limited places for community recreational activity within East Wimmeroo. Nevertheless, the network of natural spaces provides a unique opportunity to provide an inter-connected network of public open space linking the emerging community to important natural spaces such as Mariginiup Lake. This network, and in particular the Parkland Link which will reestablish connectivity between Mariginiup Lake, Little Mariginiup and Lake Adams will be an important feature of the future community that offers an active lifestyle, deeply connected to its parks and lakes. The design and amenities provided within areas of public open space will be a key component of this and therefore be central to the health and wellbeing of the community. Similarly, the provision of a centrally located primary school will provide a focal point social connectivity, strengthening community identity and resilience.

Opportunities to incorporate storytelling celebrating landscape, fauna and flora, cultural heritage and historical activities within public open space, streetscapes and the broader built environment should be explored. Details of how this will be achieved are included in the Landscape Masterplan prepared by Considered Space accompanying the LSP.



Further Detailed Design Guidance

Precinct 8: Local Structure Plan Design Philosophy

The development aspirations set out by this Sense of Place Statement have been integrated within the urban design response that the Precinct 8 Structure Plan facilitates. The Sense of Place Statement should be read in conjunction with Part 2 of the Precinct 8 Structure Plan and in particular, the urban design philosophy set out in section 6.2 which seeks to:

- Create an environmentally sensitive development, that retains areas of high-quality natural vegetation and existing topography to minimise the need for imported fill and foster Water Sensitive Urban Design.
- Promote an urban form and open space network that creates a unique sense of place that celebrates natural features within the site, maximising connecting to and between the lake system.
- Establish an efficient movement network that minimises traffic impacts on residential streets within the Structure Plan area and residential areas surrounding the site.
- Provide attractive walking routes with pathways that benefit from a high degree of shade and maximise the accessibility of public open space and the school site.
- Provide appropriate separation between residential areas and sensitive environmental areas and minimise the potential impacts of bushfire and flooding.

Similarly, the allocation and distribution of public open space throughout the structure plan area will also be a key feature of the precincts future character and the sustainability of the emerging community. The structure plan sets out a hierarchy of open space to serve a range of activity and passive recreation functions. Therefore, this Sense of Place Statement should be read in conjunction with section 6.3 of the LSP.





**PRECINCT 8: MARIGINIUP
ABORIGINAL CULTURAL HERITAGE
DUE DILIGENCE**

October 2023



**PRECINCT 8: MARIGINIUP
ABORIGINAL CULTURAL HERITAGE
DUE DILIGENCE**

October 2023

By urbanplan

**On behalf of
Qube Property Group Pty. Ltd.**

Disclaimer

The recommendations and assessments contained in this Aboriginal Cultural Heritage assessment are consistent with Trade Practice Laws and are based on the requirements of the Aboriginal Heritage Act 1972, noting the repeal of the Aboriginal Cultural Heritage Act 2021, as supported by due diligence process given in the Aboriginal Cultural Heritage Management Code (30 May 2023) and Planning and Development Act 2005, associated regulations and guidelines. All investigations, consultations, projections and recommendations made in this assessment are made in good faith on the basis of the information available at the time of assessment and as they relate to the East Wimmeroo District Structure Plan. Notwithstanding anything contained within, the consultant(s) will not, except as the law requires, be liable for any loss or other consequences (whether or not due to negligence of the consultant, their servants or agents) arising out of the services rendered by the consultants.

EXECUTIVE SUMMARY

Mariginiup, Precinct 8, is a proposed residential development cell identified by the Western Australian Planning Commission's East Wanneroo District Structure Plan.

With reference to that District Structure Plan, this assessment undertook investigations of cultural heritage and consulted the Cultural Advisory Committee of the Whadjuk Aboriginal Corporation as to the proposed subdivision activity relative to the existing sites of significances. In this instance, sites ID 3741 Lake Mariginiup and ID 28616 Lake Mariginiup Scarred Tree both sites being non-gender specific.

Consultation comprised a discussion of the planning framework and the resultant concept plan of subdivision and how it related to Precinct 8 and linkage north to Lake Coogee (Lake Adam).

Investigations into Aboriginal Cultural Heritage confirm Native Title has been extinguished and replaced with an Indigenous Land Use Agreement between the State and the representative body being Whadjuk Regional Corporation

An official Departmental review referencing a shapefile of the Register of Places and Objects, as well as the DPLH Heritage Database, concludes that the proposed Mariginiup Precinct 8 project boundary:

- intersects the boundary of Aboriginal site ID 3741 Lake Mariginiup;
- is north of Aboriginal site ID 28616 Lake Mariginiup Scarred Tree; and
- sites are non-gender specific.

The sites of significance are located in the state reserve of Mariginiup.

To recognise Aboriginal cultural heritage and the significance of place, the Precinct 8 Mariginiup Local Structure Plan has provided for the representative planning and design of the following elements:

- Protection of Lake Mariginiup within a state reservation
- Definition of a cultural trail linking little Lake Mariginiup to Lake Adam
- Alignment of a cultural learning and interpretive connection to place through heritage trails, way findi and totems
- Meeting places along the trail including fire pits
- Financing Noongar Artists for cultural art
- Naming of places
- Landscape and foreshore master plans inclusive of expression of the local aesthetic in the public re including parkland links and endemic plant species.

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ANNEXURES

- Annexure A: Subdivision Plan Relative to Sites
- Annexure B: Cultural Heritage Research
- Annexure C: Cultural Heritage Mapping of Mariginiup

1. INTRODUCTION

Mariginiup, Precinct 8, is a proposed development cell identified by the Western Australian Planning Commission's East Wannon District Structure Plan. Qube Property Group, on behalf of other property owners, are the lead developers undertaking site investigations and planning of the entire Precinct 8 for future residential development.

1.1. LEGISLATIVE CONTEXT OVERVIEW

In pursuit of optimum land use and development, one of the key principles of the Aboriginal Cultural Heritage Act 2021, section 10(d), is the priority given to cultural values held by Aboriginal people in relation to the management of cultural heritage that may be harmed by the development activity. Accordingly, a due diligence assessment is warranted, in accordance with the guidelines, to determine whether cultural heritage, tangible or intangible, is located within the area of proposed development activity (section 102 (c) or (d)) ¹. Due diligence assesses the risk of potential harm to cultural heritage and establishes how to proceed with the proposed activity, whether:

- activity can be carried out by an alternative method to avoid harm;
- authorisation is required;
- the assigned level of authorisation; and
- inclusive of consultative outcomes from engagement with Knowledge Holders.

In the instance of Precinct 8, Lake Mariginiup and the Mariginiup Scat Tree are tangible Registered sites of significance within Precinct 8, concomitant with the proposed activity of subdivision. In addition, potential intangible cultural landscapes connect elements of cultural heritage, namely the linkage between Heritage places of Mariginiup to Marrynginup and Lake Adam (section 12 (b) iii). Subdivision of land is identified as moderate to high ground disturbance and, dependent upon the potential risk of harm being caused to cultural heritage and the means of management, is classified as Tier 3 activity (section 100).

Where due diligence identifies the presence of cultural heritage and the development can be undertaken without harm to that heritage and consultation with Knowledge Holders or Native Title Holders or Representative Body confirms

¹ With the repeal of the 2021 Aboriginal Cultural Heritage Act 2021 reference was also made to the guidance under the 1972 Aboriginal Heritage Act to concur procedure.

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the development will not harm the cultural heritage (section 107) then for the purposes of due diligence there is no risk and the activity can proceed without authorisation (section 112).

urbanplan approached the Whadjuk Regional Corporation to consult with Knowledge Holders. At that time the Cultural Advisory Committee is the representative body speaking for cultural heritage matters in the absence of Local Aboriginal Cultural Heritage service. Note, Native Title has been extinguished and replaced with an Indigenous Land Use Agreement (with the State) the representative body being Whadjuk Regional Corporation (pers. comm. DPHL 20 June 2023).

Therefore, dependent upon the outcomes of the due diligence assessment, there is potential for the proposed development to subject to all reasonable steps being undertaken to avoid harm to cultural heritage through implementation of mitigation measures in a management plan as agreed by the Knowledge Holders (section 106).

1.2. PROPOSED ACTIVITIES

The proposed residential subdivision of Precinct 8 is guided by the East Wimmeroo District Structure Plan. The precinct will be developed in stages commensurate with service mains supply. Land uses within Precinct 8 include:

- comprise approximately 2,500 lots
- primary school
- protection of the margins of Lake Mariginiup to accord with EWDSP
- significant areas of remnant bushland and public open space
- an open space linkage north the Lake Adam (culturally know as Lake Coogee)
- landscaping to all areas of open space.

1.3. PROPOSED DEVELOPMENT AREA AND PARTIES TO THE PLAN

The Precinct 8 Mariginiup is described as freehold tenure under numerous ownerships. Qube Property Group is the applicant for the Mariginiup Precinct 8 undertaking investigation and consultation in regard to Aboriginal cultural heritage matters on behalf of other property owners as given in the East Wimmeroo District Structure Plan.

The Aboriginal organisation that is the initial party to the plan is the Whadjuk Regional Corporation pursuant to the ILUA.

Proposed development is illustrated by plans and maps with spatial coordinates to define the precise bounds of the Precinct 8 footprint relative to Registered sites and Heritage places. Refer Annexures B and D.

1.4. EXISTING AND PROPOSED PLANS

The only plan that has an approved status is the East Wanneroo District Structure Plan as issued by the Western Australian Panning Commission. That plan sets the parameters for future development to which the Mariginiup Precinct 8 proposed subdivision accords.

The proposed plan of subdivision is given at Annexure A.

1.4.1. DEVELOPMENT TIMEFRAMES

The estimated timeframe for the planning, design development and site development is estimated at 10 years. Within that timeframe it is not inconceivable there will be changes to the plan and the composition of development outcomes; none however, are likely to fetter the Registered Sites of Lake Mariginiup or the Scar Tree as these fall within state reserves well separated from the development front.

1.4.2. IDENTITY OF PARTIES

At the time of creation of the proposal, the main parties consulted about proposed development comprise:

- Cultural Advisory Committee of the Whadjuk Regional Corporation.
- Qube Property Group Pty. Ltd as representative of freehold land owners.

2. CONSULTATION

2.1. PARTY CONSULTED

As noted, the consultation was undertaken in accordance with the 2021 Act prior to repeal of that Act. The members of the Cultural Advisory Committee of the Whadjuk Regional Corporation were consulted twice: 25 May. Those in attendance included:

- David Collard (CEO)
- Cheryl Thomas (Exec Sec)
- Stacey (Admin)
- Kerry Anne Winmar
- Kelvin Garrett
- Dulcie Donaldson
- Geraldine Hayden
- Rose Ann Wally
- Stan Hedland
- Terry Morich

2.1.1. INFORMATION PROVIDED

The information provided to the representatives of the Cultural Advisory Committee comprised:

- An Agenda advance to Whadjuk Regional Corporation
- aerial photography of Lake Mariginiup and surrounds
- East Wanneroo District Structure Plan
- concept plan of subdivision highlighting existing state reserves and linkage north to Lake Adam.

2.1.2. FORM OF CONSULTATION

The consultation comprised a discussion of the planning framework created by the Planning Commission – East Wanneroo District Structure Plan (EWDSP) and how it relates to Precinct 8 and linkage north to Lake Coogee (Lake Adam). This included:

- Relaying known knowledge about cultural characteristics of Mariginiup
- Seeking observations and any concerns
- What management and mitigation was likely warranted.

With reference to aerial photography, the East Wanneroo District Structure Plan and a concept plan of subdivision, highlighting existing state reserves and linkage north to Lake Adam, items that were discussed included:

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- Landform of Country
- East Wannon District Structure Plan sets direction and relationship to Precinct 8
- Linkages north and south and east around Lake Mariginiup
- Proposed subdivision around the margins of Mariginiup and separation to the state reserves
- Proposed link north to Lake Adam.

The details of the proposed subdivision and development activity were then discussed that may affect concerns about Aboriginal cultural heritage significance:

- Proposed subdivision to margins of Lake Mariginiup and nature of subdivision activity
- Observations on the link north and to surrounding Heritage Places
- Discussed cultural relationship of the proposed subdivision in Precinct 8 to ascertain any areas of concern
- Any limitations to consultation
- Discussed known details of Registered significance and Heritage places including No-go areas that appear to be essentially defined by reserves indicated on the EWDSP.

2.1.3. NATIVE TITLE HOLDER OR REPRESENTATIVE BODY

Native Title has been extinguished and replaced with an Indigenous Land Use Agreement with the State the representative body being Whadjuk Regional Corporation and subsidiary Cultural Advisory Committee (pers. comm. DPHL 20 June 2023).

2.1.4. ANY LIMITATION TO CONSULTATION

No known limitations to consultation as addressed at meeting of 25 May 2023.

2.2. OUTCOMES OF CONSULTATION

The outcomes and actions from the consultation included:

- Dissatisfaction with vegetation link to north from Little Lake Mariginiup to Lake Coogee (Lake Adam) through pine trees, prefer remnant bush alignment.
- A significant freshwater spring is in the vicinity culturally known as a place of healing (not specifically identified).
- Conserve more remnant bushland over Lots 4 and 3 and possibly 6 in replacement for areas currently shown west of Pinelake Road (Lots 21, 22 and 24).
- The nature of bushland proposed to be conserved was queried.

Marigini-up potentially translates to women's food gathering – place of (pers. comm. City of Wannon). The discussion with the members of the Cultural

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Advisory Committee moved towards women's business consequent to the meaning of the place name. If the area was women's Country, then certain people cannot speak for this country; this needed to be clarified. The women sought further anthropological and ethnographic information of Mariginiup and surrounds (refer section 3.0).

Further, **urbanplan** was to liaise with Trevor Wally who has knowledge of Mariginiup.

2.2.1. LIAISON WITH REFERENCED KNOWLEDGE HOLDERS

At the suggestion of CAC Members, independent contact was made with Trevor Wally about his knowledge of the Mariginiup locality. Trevor was of the view it was important to locate the primary reference who speaks for Country. Information researched from DPLH database and Survey reports lists several parties that were consulted commencing in 1985, more recently in 2007 (refer section 3.0 and Annexure C).

While primary sources are significant to the consultation process, the totemic system of Aboriginal culture implies equal rights to speak for country - various parties may have the right to speak for Country - one Totem cannot override another warranting the need for parties to work together. The Restricted access file 22160 references the Colbung family as a potential primary source.

urbanplan sought advice from the Department and Whadjuk Regional Corporation (pers. comm. 27 June 2023) about contacting a member of the Colbung family who may speak for Country and was advised to go through the CAC who have the capital and are assigned to oversee the process. Given LACHs has not been established for the area, the nominated representative knowledge holder is the CAC who is responsible for oversee processes of Aboriginal cultural heritage.

3. ABORIGINAL CULTURAL HERITAGE

3.1. IDENTIFIED ABORIGINAL CULTURAL HERITAGE

Precinct 8 the subject of this Aboriginal cultural heritage plan intersects the boundary of Aboriginal site ID 3741 being Lake Mariginiup. There are two known Aboriginal name derivatives for the Lake environs:

- said to possibly mean "to pull out flag leaved flax"(East Wanneroo District Sense of Place Statement); or
- potentially translates to women’s food gathering – place of, Marigini-up (pers. comm. City of Wanneroo).

With regard to the latter, during consultation with representatives Cultural Advisory Committee of the Whadjuk Regional Corporation, the women present took a keen interest in two aspects:

- whether the area was gender specific; and
- the adjoining area of Heritage place Marrynginup and the linkage between Lake Mariginiup.

3.1.1. CHARACTERISTICS SOURCED FROM DPLH DATA

Known characteristics of Aboriginal cultural heritage located within or adjacent the application area of Precinct 8 derived from the Departmental (website) database include:

Lake Mariginiup

Lake Mariginiup, Registered site 3741, a large water body with known research characteristics of:

- Mythological
- Hunting
- Artefacts and scatter site
- No Gender restrictions.

This was first identified through an anthropological survey (R. O’Connor July 1985) undertaken with Brophe, Little and Bodney and Colbung confirming Lake Mariginiup was a hunting area for waterfowl, turtles and kangaroo.

The boundary of Registered site 3741 Lake Mariginiup is approximately 110m from the nearest subdivision activity.

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Scar Tree

Scar Tree Registered Site 28616, within state Reserve 46711, is south west of Precinct 8 subdivision activity. The separation between the proposed subdivision activity and the boundary of the 28616, within which the Scar Tree occurs, is 120m.

Marrynginup

It is understood Marrynginup Heritage place 22160, north of Coogee Road, has a dithered boundary providing the general locality of Aboriginal cultural heritage rather than its specific location with the characteristics of:

- Camp
- Plant Resource
- Water Source
- Hunting Place
- Meeting Place
- Artefacts / Scatter
- Ceremonial
- Historical
- Midden
- Scatter
- Modified Tree
- Named Place
- Natural Feature
- Other: Healing Pits
- No Gender restrictions

Survey report 22160 is a Restricted Access file of Marrynginup holds sensitive information. During investigations in the Department, this Heritage place is known to be non-gender specific (pers. comm. DPLH 20 June 2023). The registered knowledge holder associated with this file is deceased with next of kin reference as the Colbung Family.

Lake Adams

Other Heritage places in vicinity comprise Heritage place 3396 Lake Adams (culturally known as Lake Coogee) which is immediately north of Precinct 8 and Coogee Road.

Honey Possum

Honey Possum Registered site 3503, four square kilometres site north of Coogee Road and Precinct 8 and has the characteristics of:

- Food gathering
- TECs
- Women's business and also Men's meeting place
- No Gender restrictions.

3.1.2. ABORIGINAL CULTURAL HERITAGE SURVEY REPORTS

More specific information derived from Survey reports 23546 and 23547 follows:

Survey report 23546 by R. Coghlan and A. Carson (April 2007) reports on the results of an archaeological survey of Lake Mariginiup for a Section 18 Application. The purpose of the archaeological survey was to seek a permit for proposed bore locations to assist groundwater investigations at Lake Mariginiup by the Department of Water.

Area of focus was on the lake bed and western shoreline and buffer the areas of highest archaeological potential. During the site survey a scar tree was identified. No other artefacts or archaeological material was identified within the area of disturbance. The Combined Metropolitan Group was consulted.

Survey report 22426 involves a Section 18 notice and supporting documentation for submission to the Aboriginal Cultural Materials Committee for the Perth shallow groundwater systems investigation (Gnangara Groundwater Protection Area) of Lake Mariginiup by Department of Water.

Apparently, at that time, the Aboriginal Cultural Materials Committee did not approve the permit.

Survey report 23547 by G. Wright and Fisher (March / April 2007) was a supplementary ethnographic report of Lake Mariginiup consequent to the APMC refusal to grant a section 18 Permit to enable the Department of Water's groundwater investigations. All groups consulted felt strongly that Lake Mariginiup was a place of significance and should be recognised on the 'permanent register' of significant sites. The Lake's value comprises a habitat and food resource base connected to other wetlands (for example Lake Adam) a linkage or songline that extends through the metropolitan area forming part of the Waugal manifestation; being of subterranean nature, monitoring bores will offend spiritual significance.

All groups consulted support measures by the Department of Water to prevent further degradation of the environment at Lake Mariginiup apparently acknowledging establishment of a groundwater monitoring programme by Department of Water. It is deduced Lake Mariginiup became a Registered site of Significance at this time.

3.2. SUMMARY OF ABORIGINAL CULTURAL HERITAGE

An official Departmental review referencing a shapefile of the Register of Places and Objects, as well as the DPLH Heritage Database, concludes that the proposed Mariginiup Precinct 8 project boundary:

- intersects the boundary of Aboriginal site ID 3741 Lake Mariginiup;
- is north of Aboriginal site ID 28616 Lake Mariginiup Scarred Tree; and
- sites are non-gender specific.

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Furthermore, Mariginiup Precinct 8 is in the vicinity of:

- lodged Aboriginal heritage place ID 22160 Marrynginup; and
- Aboriginal heritage place ID 3396 Lake Adams.

Mariginiup Precinct 8 does not intersect Aboriginal registered site ID 3503 Honey Possum Site.

4. PLANNING FOR ABORIGINAL CULTURAL HERITAGE

4.1. RECOGNITION OF ABORIGINAL CULTURAL HERITAGE

The East Wannon District Structure Plan requires Aboriginal cultural heritage assessments to:

- provide for a cultural landscape link north connecting Lake Mariginiup and Little Lake Mariginiup north to Lake Adams (Lake Coogee);
- investigate sites and places of significance; and
- undertake consultation with knowledge holders who may speak for country.

The City of Wannon District Sense of Plan Policy acknowledges that Aboriginal heritage across the East Wannon is strongly linked to the wetland system that needs to be protected. Inclusive in the wetland sites throughout the district that have stories and connections to place is Lake Mariginiup.

The policy encourages local structure plans to account for:

Preserve, protect and enhance heritage sites by seeking opportunities to raise awareness about local heritage sites, landscapes, and structures.

Identify local stories, sites, people, and landscapes and reflect these through interpretation, amenity and local aesthetic throughout the public realm, including landscape design, public art, parkland links, public realm furniture / amenity, park and street naming, signage or other interpretative devices identified by development proponents.

Accordingly, to recognise Aboriginal cultural heritage and the significance of place, the Precinct 8 Mariginiup Local Structure Plan has provided for the representative planning and design of the following elements:

- Protection of Lake Mariginiup within a state reservation
- Definition of a cultural trail linking little Lake Mariginiup to Lake Adam
- Alignment of a cultural learning and interpretive connection to place through heritage trails, way finding and totems
- Meeting places along the trail including fire pits
- Financing Noongar Artists for cultural art
- Naming of places
- Landscape and foreshore master plans inclusive of expression of the local aesthetic in the public realm including parkland links and endemic plant species.

These are documented in the foreshore and landscape management plans that form part of the Precinct 8 Mariginiup Local Structure Plan.

4.2. IMPLEMENTATION

The development of Precinct 8 for residential purposes will not be undertaken for many years and will occur in stages subject to service mains supply and land owner initiative. Prior to development individual owners are required to seek a permit pursuant to section 18 of the Aboriginal Heritage Act 1972. During construction phases, individual owners will also be responsible for enabling Aboriginal cultural monitors to survey the site.

4.2.1. MANAGING ACTIVITY DURING WORKS

The sites of significance ID 3741 Lake Mariginiup and ID 28616 Lake Mariginiup Scarred Tree are located within existing state government reserves. This affords the sites exclusive protection.

To avoid or minimise the risk of potential harm being caused to Aboriginal Cultural Heritage sites 3471 and 28616 by the proposed subdivision activity, at time of development by individual owners it is proposed to undertake the following management measures including:

- demarcating no-go areas by fencing of the state reserve of Lake Mariginiup and the scar tree to avoid harm; thereafter
- enable Aboriginal custodian monitoring during sites works to reduce risk of harm to cultural heritage.

5. CONCLUSION

Aboriginal Cultural Heritage consultation with the Whadjuk Aboriginal Corporation representatives comprised a discussion of the planning framework and the resultant concept plan of subdivision and how it related to Precinct 8 and linkage north to Lake Coogee (Lake Adam).

Investigations into a shapefile of the Register of Places and Objects, as well as the DPLH Heritage Database, concludes that the proposed Mariginiup Precinct 8 project boundary intersects the boundary of Aboriginal site ID 3741 Lake Mariginiup and is north of Aboriginal scar tree ID 28616.

The sites of significance are located in the state reserve of Mariginiup and can be demarcated to avoid any harm.

To recognise Aboriginal cultural heritage and the significance of place, the Precinct 8 Mariginiup Local Structure Plan has provided for the representative planning and design of the following elements:

- Protection of Lake Mariginiup within a state reservation
- Definition of a cultural trail linking little Lake Mariginiup to Lake Adam
- Alignment of a cultural learning and interpretive connection to place through heritage trails, way finding and totems
- Meeting places along the trail including fire pits
- Financing Noongar Artists for cultural art
- Naming of places
- Landscape and foreshore master plans inclusive of expression of the local aesthetic in the public realm including parkland links and endemic plant species.

urban
plan

mariginiup precinct 8
aboriginal cultural due diligence

ANNEXURE A

SUBDIVISION PLAN RELATIVE TO SITES



ANNEXURE B

CULTURAL HERTIAGE RESEARCH

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aboriginal cultural due diligence**

Identification	Name/Class	Date	Author	ACH Reference
3741	Lake Mariginiup	July 1985	R. O'Connor	059/85
Anthropological survey undertaken with Bropho, Little and Bodney and Colbung confirming Lake Mariginiup was a hunting area for waterfowl, turtles and kangaroo.				
3741	Lake Mariginiup	April 2007	R. Coghlan A. Carson	3471/09
Department of Water archaeological survey for purpose of proposed bore location to assist groundwater investigations at Lake Mariginiup. Area of focus was on the lake bed and western shoreline and buffer the areas of highest archaeological potential. A scar tree was identified. No other artefacts or archaeological material was identified within the area of disturbance. The Combined Metropolitan (Aboriginal reference*) Group was consulted; recommendation being Aboriginal representatives should be present to monitor any future activity. *Messers Wilkes, Garlett, Bropho, V. & T. Corunna.				
23546	Scar Tree Registered site	April 2007	R. Coghlan A. Carson	ID: 28616
The Lake Mariginiup Scar Tree consists of a single elongated oval shaped scar on the trunk of a Eucalypt tree.				
23547	Lake Mariginiup Registered site	March / April 2007	G Wright S Fisher	3472/09
Supplementary ethnographic consultations consequent to the APMC refusal of a section 18 Permit to enable the Department of Water's groundwater investigations. All groups consulted felt strongly that Lake Mariginiup was a place of significance and should be recognised on the 'permanent register' of significant sites. The Lake's value comprises a resource base linked to other wetlands (Lake Adams) that extend through the metropolitan area forming part of the Waugal manifestation. Accordingly, being of subterranean nature, monitoring bores will offend spiritual significance.				
All groups consulted support measures to prevent further degradation of the environment at Lake Mariginiup apparently acknowledging the establishment of a groundwater monitoring programme of Department of Water.				
The groups consulted comprised nominated participants by the Elders from: Ballaruks Aboriginal Corporation Bibbulmun Group Members of the Warrell Family Combined Metropolitan Group Independent Aboriginal Environmental Group				
22160	Marrynginup Heritage place		Colbung Family	3472/09
Survey Report 22160: Restricted Access. Non-gender specific (pers. comm. DPLH 20 June 2023). Potential contact Esandra Colbung.				

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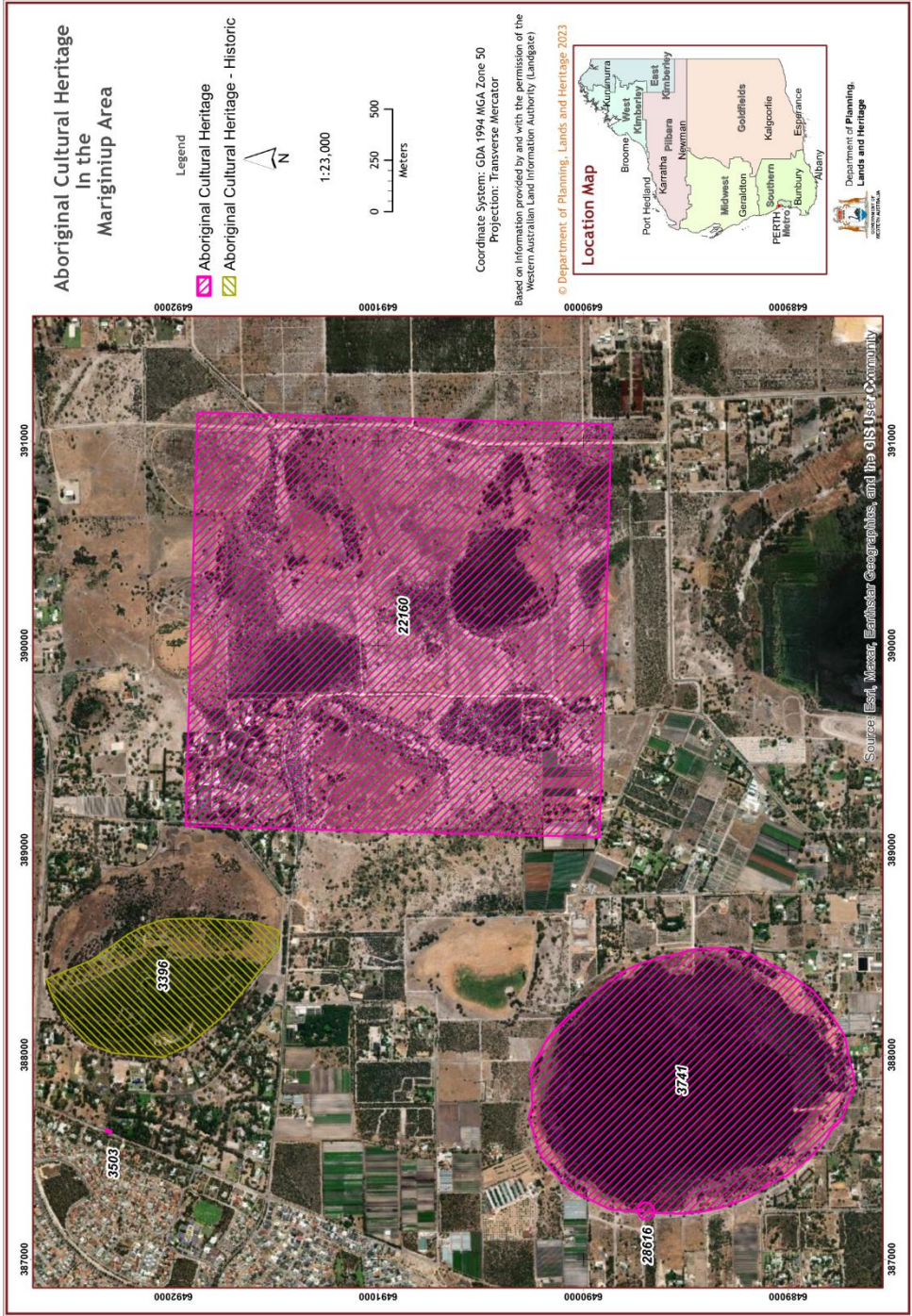
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ANNEXURE C

CULTURAL HERTIAGE MAPPING OF MARIGINIUP

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Attachment 3

Local Water Management Strategy





LOCAL WATER MANAGEMENT STRATEGY

Mariginiup Precinct 8


QUBMARI01
09/04/2024



Document Status

Version	Purpose of document	Authorised by	Reviewed by	Review Date
Draft A	Draft for Review	K. Greaves	G. Edwards	11/12/2023
Rev 0	Final	G. Edwards	S. McSweeney	25/01/2024
Rev 1	Final	G. Edwards	S. McSweeney	09/04/2024

Approval for Issue

Name	Signature	Date
Shane McSweeney		09/04/2024

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Prepared By

Pentium Water Pty Ltd
Level 1, 640 Murray Street
West Perth, Western Australia 6005
Phone: +61 (0) 8 6182 1790
Email: g.edwards@pentiumwater.com.au
Author: Gerard Edwards

Reviewer: Gerard Edwards
Approved by: Shane McSweeney
Version: Rev 1
Date: 09/04/2024

Prepared For

Qube Property Group
Suite 3, Level 1, 437 Roberts Road
Subiaco, Western Australia 6008
Phone: +61 (0) 8 6141 8284
Email: rod@qubeproperty.com.au
Contact: Rod Gardiner
Position: Director



Executive summary

Planning framework

This Local Water Management Strategy (LWMS) has been prepared to support the Mariginiup – Precinct 8 Local Structure Plan (LSP) of the Mariginiup landholding within the City of Wanneroo (The City). LSP approval is being sought for the site which comprises approximately 264.1 ha of passive rural land, which includes market gardens, a plant nursery, and other rural commercial pursuits in the suburb of Mariginiup. Precinct 8 is located approximately 25 km north of Perth CBD and 5 km from the Joondalup Train station/centre and freeway. The subject site is predominantly zoned “urban deferred”, with a small section in the northwest region zoned “rural” and Lake Mariginiup and surrounds, located in the south-east, zoned “parks and recreation” under the Metropolitan Region Scheme (MRS). A request will need to be lodged with the Western Australia Planning Commission (WAPC) to lift the Urban Deferment (once the original reasons for deferral have been addressed) as part of the project delivery.

The objective of this LWMS is to demonstrate that the land has the capacity to support the proposed land use change identified in the LSP and that the LSP can appropriately manage water (flooding, surface water, and groundwater). Precinct 8 is identified within “Stage 1” in Figure 1.16 of the EWDS (August 2021). DWER in its advice to DPLH indicated it would consider development within “Stage 1” provided that appropriate land is being set aside for flood management and the future connection to a district scale groundwater management scheme.

This LWMS indicates that the project (Precinct 8) has sufficient clearance to groundwater levels (including future predicated groundwater levels) and that development won't require subsoil drainage to be installed. The absence of the need for subsoil drainage indicates that a future connection to a district scale groundwater management scheme is not required. The LWMS also indicates the flood management requirements including an assessment of cumulative flood impacts to the water levels within Lake Mariginiup and Little Mariginiup. The cumulative flood impact assessment indicates that the instantaneous flood height does not present a risk to the LSP implementation as the anticipated difference between future lake water levels and the finished lot levels surrounding the lake will have well in excess of the separation distance or freeboard required.

This LWMS will recognise the principles, objectives, and requirements of total water cycle management as outlined in the *State Planning Policy 2.9 Water Resources* (Government of WA, 2006), *Liveable Neighbourhoods* (WAPC, 2007) and the *Stormwater Management Manual for WA* (DWER, 2004 – 2007), including the *Decision process for stormwater for stormwater management in WA* (DWER, 2017). The LWMS will also broadly state the water quantity and quality management objectives to be achieved.

The proposed development will include total water cycle management principles and objectives guided by the *Better Urban Water Management Framework* (WAPC 2008).

LWMS key elements

Key elements of this LWMS are presented in Table 1.

Table 1: LWMS key reporting elements

LWMS elements	Design objectives/comments
Introduction (Section 1)	<ul style="list-style-type: none"> Qube Property (Qube) is seeking Local Structure Plan approval for Precinct 8 which is an area of approximately 264.1 ha comprised predominantly of passive rural land located in Mariginiup. The site is currently predominantly zoned ‘Urban deferred’, with a small section in the north-west region zoned ‘Rural’ and Lake Mariginiup and surrounds, located in the south-east, zoned ‘Parks and recreation’ under the Metropolitan Region Scheme (MRS).

	<ul style="list-style-type: none"> A request will need to be lodged with the WAPC to lift the Urban Deferment as part of the project delivery. A MRS Amendment process is also required to reserve public land uses, namely reservation of Primary Distributor Roads, Integrator Arterial Roads, Parks and Recreation Reserves, Transit Corridors and High School reserves.
Topography (Section 0)	<ul style="list-style-type: none"> Surface elevation across the site ranges from 41 metres above height datum (mAHD) in the low-lying Lake Mariginiup in the south of the site to 71 mAHD in the northern portion of the site. The topography of the site is comprised of Spearwood and Bassendean low dune systems running in a north-south direction.
Geology (Section 2.4)	<ul style="list-style-type: none"> Geology mapping indicates the majority of the site is underlain by Spearwood Sands (S7). Spearwood sands typically consist of pale and olive yellow, medium to coarse grained, subangular quartz with traces of feldspar of residual origin. The lower elevation areas are mapped as being underlain by Peaty clay (Cps) of lacustrine origin typified by dark grey and black clays with variable sand content. The Spearwood Sands comprise of sands with high permeability but low nutrient retention which prevents the discharge of increased nutrient loads to the downstream environment. This presents implications for future development. The superficial formation is underlain by the Jandabup, Mariginiup subareas while the Wanneroo confined subarea as part of the Leederville and Yarragadee formation.
Groundwater (Section 2.11)	<ul style="list-style-type: none"> The site is underlain by the Superficial, Leederville and Yarragadee aquifers. Local hydrology is dominated by infiltration and evapotranspiration with almost no runoff due to the highly conductive sandy soils on site. Regional groundwater contours indicate that the historical maximum groundwater level (MGL) at the site ranges from approximately 39 mAHD in the south-westernmost corner of the site to 43 mAHD on the eastern boundary of the site. Site specific monitoring was undertaken between September 2009 and October 2010 and in 2021, with maximum (calibrated) groundwater across the site during 2021 ranging from 40.12 to 44.11 mAHD. Depth to groundwater recorded during 2021 monitoring ranged from 1.73 mbgl (MB01 in September 2021) to 25 mbgl (MB06 in July 2021). Groundwater flow is generally east to west. The AAMGL within the site ranges from approximately 44 to 38.5 mAHD.
Surface water (Section 2.12)	<ul style="list-style-type: none"> The site contains two major depression areas: Lake Mariginiup and Little Mariginiup Lake. Surface water flows into these depression areas and there is no defined drainage system that directs surface water out of the site area.
Wetlands (Section 2.9)	<ul style="list-style-type: none"> Two Conservation Category wetlands (CCW) are mapped within the site boundary: Lake Mariginiup (ID 7953) and Little Mariginiup Lake (ID 8161). CCW wetlands support a high level of attributes and functions and are considered the highest priority wetlands. One of the wetlands located on site (Lake Mariginiup) is associated with cultural heritage values.
Water source planning (Section 3)	<ul style="list-style-type: none"> The site is located outside all Underground Water Pollution Control Areas (UWPCA) and the site will be serviced via the existing potable water supply scheme. It is proposed that approximately 197,608 kL/yr will be required to irrigate POS.



	<ul style="list-style-type: none"> Qube currently holds an annual groundwater allocation of 33,050 kL/yr, however the use of this licence needs to be confirmed. The allocation is insufficient to cover the required irrigation demand alone. No groundwater resources are available for allocation in the aquifers beneath Precinct 8 at present. Qube will be required to transfer existing groundwater licences during the acquisition of new properties that contain existing licences or through trades for existing licences and land use changes across the precinct and district.
Water conservation strategies (Section 4)	<ul style="list-style-type: none"> Landscape packages which adopt Waterwise principles will be encouraged. Detailed landscape plans for POS areas will be provided at subdivision stage which detail the proposed landscape treatments, plantings, community facilities and integration of drainage areas with the POS landscape design.
Stormwater management (Section 5)	<ul style="list-style-type: none"> The first 15 mm of rainfall to be infiltrated close-to-source or treated in bioretention basins within each catchment to mimic predevelopment conditions. The site consists of trapped and discharging catchments. Runoff generated in trapped catchments is managed via retention basins which are sized to infiltrate up to the 1% AEP event. The first 15 mm of runoff generated in discharging catchments will be treated in bioretention basins. Runoff in larger events will be conveyed to Little Mariginiup Lake or Lake Mariginiup. A cumulative flood impact assessment indicates that the cumulative inflows and resulting instantaneous lake water level rise does not present a risk to proposed urban development surrounding Lake Mariginiup based on an assessment of lake water levels and the proposed finished earthworks levels across Precinct 7 and 8.
Groundwater management (Section 6)	<ul style="list-style-type: none"> Given the separation between the design surface and the proposed Controlled Groundwater Level (CGL), it is not anticipated that subsoil drainage is a significant design constraint for Precinct 8. Subsoils may be installed beneath parts of the project area as a contingency against rising groundwater levels but at this stage are not contingent on a district scale groundwater management scheme
Monitoring and reporting (Section 7)	<ul style="list-style-type: none"> Quarterly groundwater levels and quality monitoring will be undertaken for a period of 3 years following practical completion, with a review after 18 months. Quarterly surface water levels and quality monitoring will be undertaken for a period of 3 years following practical completion, with a review after 18 months.
Potential future monitoring requirements (Section 8)	<ul style="list-style-type: none"> Section 8 provides details of UWMP requirements and the roles and responsibilities related to implementation of the LWMS.

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1. Introduction

1.1. Purpose

This Local Water Management Strategy (LWMS) has been prepared on behalf of Qube Property (Qube) to support the Mariginiup – Precinct 8 Local Structure Plan (LSP) of the Mariginiup landholding within the City of Wanneroo (The City) (Figure 1). LSP approval is being sought for the site which comprises approximately 264.1 ha of passive rural land as well as a plant nursery, a dog trainer, a door supplier, a homewares store and two florists in the suburb or Mariginiup.

1.2. Planning background

The LSP is part of the East Wanneroo District Structure Plan (DSP). The DSP was prepared to guide land use planning and development of approximately 8,300 hectares (ha) across a small portion of Pinjar, most of Mariginiup and Jandabup, the eastern part of Wanneroo, Gnaragar, and south-west Lexia. The DSP was approved by the Western Australian Planning Commission (WAPC) in August 2021.

1.3. Planning context

The subject site is predominantly zoned “urban deferred”, with a small section in the northwest region zoned “rural” and Lake Mariginiup and surrounds, located in the south-east, zoned “parks and recreation” under the Metropolitan Region Scheme (MRS). A request will need to be lodged with the Western Australia Planning Commission (WAPC) to lift the Urban Deferment (once the original reasons for deferral have been addressed) as part of the project delivery.

A state-run MRS Amendment process is also required to reserve public land uses, namely reservation of Primary Distributor Roads, Integrator Arterial Roads, Parks and Recreation Reserves, Transit Corridors and High School reserves.

1.4. Proposed structure plan

The LSP covers approximately 264.1 ha and will be developed to provide housing, a local centre, primary school and public open space (POS). The LSP is shown in Appendix A.



Figure 1: Site plan and location



1.5. Design objectives

This LWMS is in accordance with State Planning Policy 2.9: Water Resources (Government of WA 2007) and has been developed with reference to the following guidance documents:

- Interim: Developing a Local Water Management Strategy (Department of Water, 2008)
- Better Urban Water Management (Western Australian Planning Commission, 2008)
- Stormwater Management Manual for Western Australia (Department of Water, 2004–2007)
- Liveable Neighbourhoods (Western Australian Planning Commission, 2003)
- Water resource considerations when controlling groundwater levels in urban development (Department of Water, 2013)
- Draft Specification separation distances for groundwater controlled urban development (IPWEA, 2016)
- Decision Process for Stormwater Management in Western Australia (DWER, 2017)

The LWMS details the integrated water management strategies to facilitate future urban water management planning. The LWMS will achieve integrated water management through the following design objectives:

- Protection of important environmental assets and water resources
- Deliver functional and integrated public open space
- Manage flooding and inundation risks to human life and property
- Ensure the efficient re-use of water resources

1.6. Key documents and previous studies

A number of on-site investigations have been completed and relied upon to prepare this LWMS including:

- District Water Management Strategy (Urbaqua, 2021)
- East Wanneroo District Structure Plan (DPLH, 2021)
- Environmental Assessment Report (PGV Environmental 2024)
- Engineering Servicing Report (JDSi 2024)
- Infiltration testing Proposed Drainage Swales Precinct 8, East Wanneroo, Mariginiup (Galt Geotechnics, 2023)

2. Existing environment

2.1. Site location and existing and historical land use

Precinct 8 is located approximately 25 km north of Perth CBD and approximately 5 km to the Joondalup Train station/centre and freeway. The site is comprised of undeveloped land with scattered vegetation and agricultural land. The site consists of the following lots:

- 32, 40, 62, 82, 98, 104, 110, 112 and 118 Coogee Rd
- 171 Mariginiup Rd
- 11, 39 and 61 Mornington Drive
- 26 Pinelake Trail
- 240, 252, 252L, 264, 264L, 274, 274L and 294 Pinjar Rd
- 10, 11, 26, 46, 55, 56, 68, 90, 91, 100, 100L, 101 102, 111, 112, 113 and 121 Ranch Rd

Table 2 is a summary of the main current land uses and structures associated with the site from a review of available geographic information systems.

Table 2: Site land uses

Lot	Industry/Land Use	Risk to water quality
82 Coogee Rd 264 and 294 Pinjar Rd	Nursery	Yes
46 Ranch Rd	Homewares store	Yes
98 Coogee Rd	Dog trainer	No
101 Ranch Rd	Door supplier	Yes
32, 40, 62, 104 and 110 Coogee Rd 171 Mariginiup Rd 39 and 61 Mornington Drive 10, 11, 68, 90, 100, 102 and 121 Ranch Rd 274 Pinjar Rd	Agricultural land	Yes
112 and 118 Coogee Rd 11 Mornington Drive 26 Pinelake Rd 240, 25, 252L, 264, 264L and 274L Pinjar Rd 26, 55, 91, 100L, 111, 112 and 113 Ranch Rd	Bush	No

2.2. Climate and rainfall

2.2.1. Baseline

The site is typical of the Swan Coastal Plain being warm and dry during summer and cooler and wetter during the winter period. Baseline rainfall (1961-1990 as defined by DWER, 2015) at Mariginiup is 773.3 mm by using data drill output, which interpolates rainfall between nearby stations, refer to Table 3 and Figure 2. Rainfall between 1990 to 2021 is 3.8% lower than the baseline rainfall at 732.4 mm.

Baseline pan evaporation (E_{pan}) for Mariginiup is approximately 1,800 mm based on BOM mapping (BOM 2023a). The potential evapotranspiration (PET) for Mariginiup is approximately 1,400 mm based on BOM mapping (BOM, 2023b), which equates to $\sim 0.78 E_{pan}$. A climate summary is provided in Table 3.



Table 3: Climate and rainfall data

Weather statistic (mm/mt)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Baseline rainfall (1961-1990)	12.2	13.7	14.0	44.0	100.9	165.4	159.1	115.3	74.7	43.8	21.6	8.6	773.3 mm
Rainfall (1990-2017)	15.2	15.6	19.5	36.0	90.7	135.4	148.2	119.4	78.5	40.3	24.3	9.3	732.4 mm
Baseline pan evaporation (E _{pan})													1,800 mm
Baseline potential evapotranspiration (PET)													1,400 mm

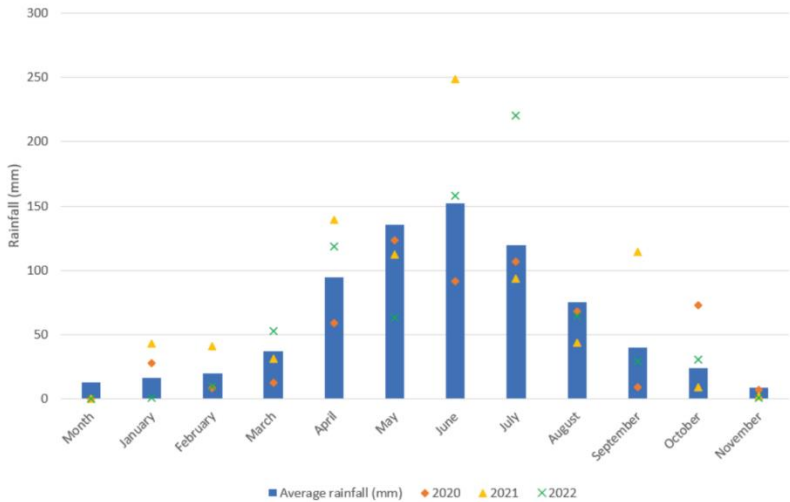


Figure 2: Historical average monthly rainfall (1986-2022) (BoM Site 9105, Wanneroo)

2.3. Topography

Topographic contours indicate elevation across the site ranges from 41 metres above height datum (mAHD) in the low-lying Lake Mariginiup in the south of the site to 71 mAHD in the northern portion of the site as shown in Figure 3.

The topography of the site is comprised of Spearwood and Bassendean low dune systems running north-south direction.

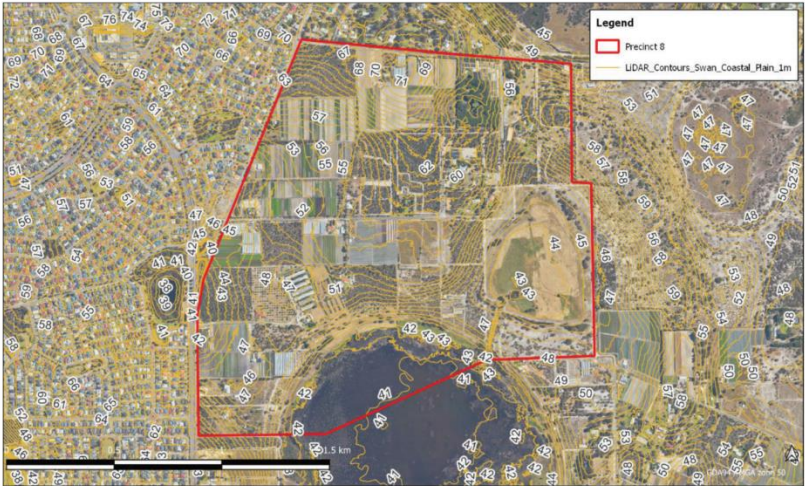


Figure 3: Site topography

2.4. Geology

2.4.1. Regional mapping

Geology mapping indicates the majority of the site is underlain by Spearwood Sands (S7) (Figure 4). Spearwood sands typically consist of pale and olive yellow, medium to coarse grained, subangular quartz with traces of feldspar of residual origin. The lower elevation areas are mapped as being underlain by Peaty clay (Cps) of lacustrine origin typified by dark grey and black clays with variable sand content.

The Spearwood Sands comprise of sands with high permeability but low nutrient retention which prevents the discharge of increased nutrient loads to the downstream environment. This presents implications for future development.

The superficial formation is underlain by the Jandabup, Mariginiup subareas while the Wanneroo confined subarea as part of the Leederville and Yarragadee formation.



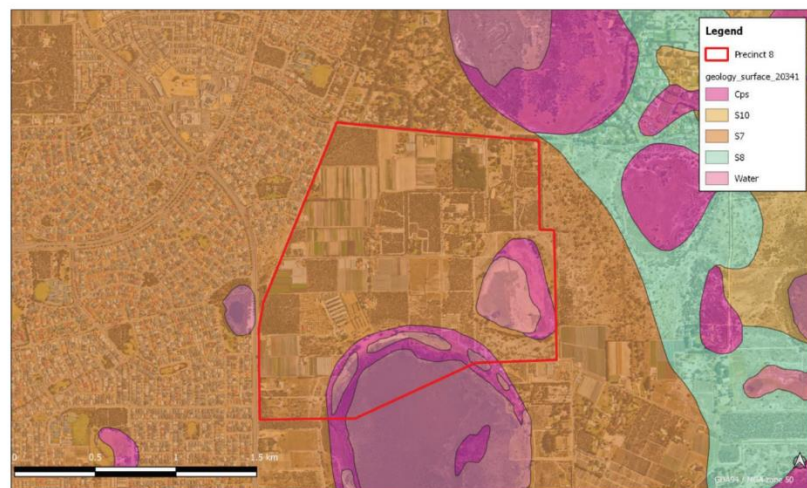


Figure 4: Site geology

2.4.2. Site investigations

A technical memorandum was prepared by Galt (Galt, 2023) presenting the outcomes of Galt's infiltration testing at eleven proposed swale locations across the subject site. Infiltration testing comprised the drilling of two machine auger boreholes extending to a target depth of 3 m for each location, and infiltration testing using the inverse auger hole technique in each borehole at depths typically ranging from approximately 2.75 m to 2.90 m below ground.

The main results from the infiltration testing include:

- The topsoil was predominantly sandy, fine to coarse grained, and sub-angular to sub-rounded. Similar subsoils were encountered at most locations
- Groundwater was generally not encountered at the locations, except for one location in the west which encountered groundwater at a depth of 1.5 mbgl,
- Minimum unsaturated hydraulic conductivity ranged from 0.7 m/day to >15 m/day.

The technical memorandum is included as Appendix B.

2.5. Acid sulfate soils

The low-lying Lake Mariginiup and Little Mariginiup Lake are areas having 'High to Moderate Risk' of Acid Sulfate Soils (ASS) as per the ASS risk mapping shown in Figure 5 (DWER, 2017). Areas of ASS cannot be confirmed or removed at this stage of the development and will need to be determined by an ASS investigation, potentially with sampling the site. Due to this risk, there will be a requirement for an ASS Management Plan to be prepared as part of the development and subdivision of the site.

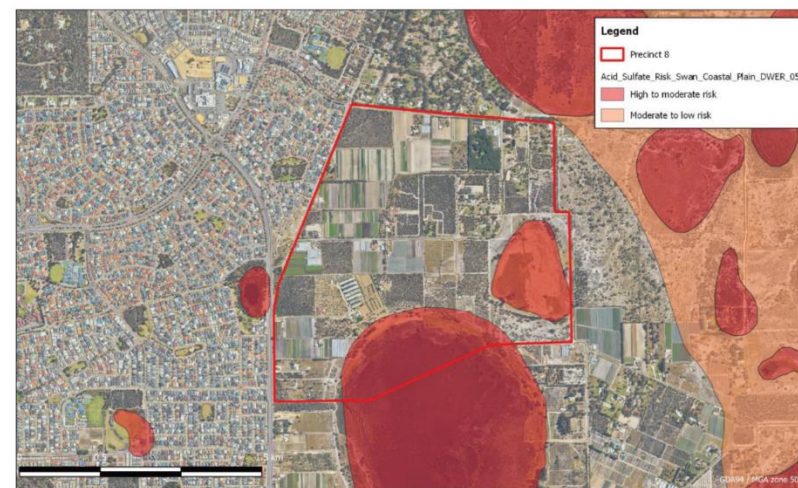


Figure 5: Acid Sulfate Soil mapping

2.6. Contaminated sites

A review of the DWER Contaminated Sites Register did not identify any known contaminated site under Section 11 of the Act within the Site or in the immediate surrounds. There are several sites where the former land use may present a contamination risk. These risks will need to be investigated as part of local structure planning and subdivision process.

2.7. Aboriginal Heritage

Lake Mariginiup, located in the southern portion of the site, is identified as an Aboriginal Heritage site (ID 3741) (Figure 6). The proposed area to be developed within the site is not within the Aboriginal Heritage site. A heritage enquiry of the site identifies that the subject site is on the land within or adjacent to the Whadjuk People Indigenous Land Use Agreement.





Figure 6: Aboriginal Heritage

2.8. Bush Forever sites

A search of the Western Australian Local Government Association Administrative Planning Categories mapping tool (WALGA, 2018) identified Lake Mariginiup and Little Mariginiup Lake as Bush Forever sites (ID 147), as presented in Figure 7.

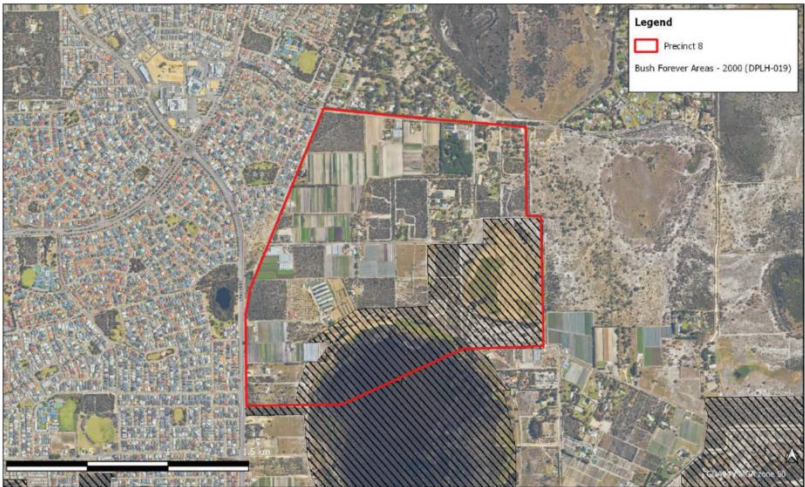


Figure 7: Bush Forever

2.9. Wetlands

Two Conservation Category wetlands (CCW) are mapped within the site boundary: Lake Mariginiup (ID 7953) and Little Mariginiup Lake (ID 8161) (Figure 8). Such wetlands support a high level of attributes and functions and are considered the highest priority wetlands. These areas will require preserving and protecting, with no development, clearing or any activity that may lead to further loss or degradation permitted.

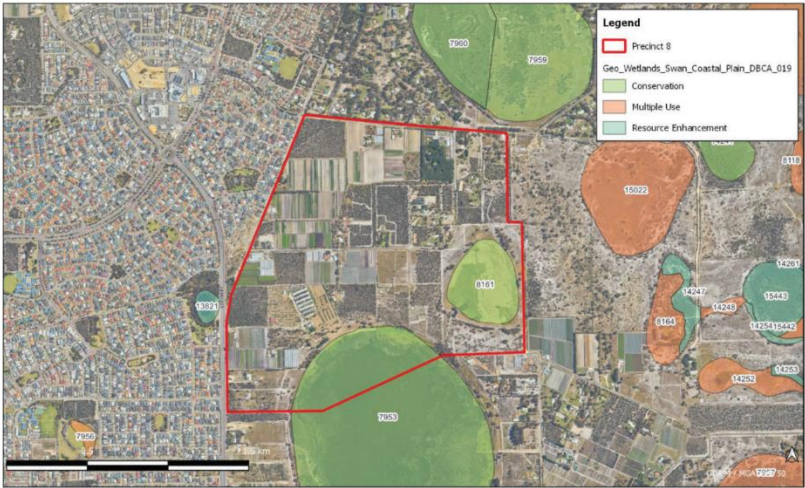


Figure 8: Wetlands

2.10. Public Drinking Water Source Areas

There are no Public Drinking Water Source Areas (PDSWAs), Water Corporation bores or Wellhead Protection Zones mapped within the site boundary (DWER,2018) (Figure 9).





Figure 9: PDWSA and Wellhead Protection Zones

2.11. Groundwater

2.11.1. Aquifers

The site is situated on the Swan Coastal Plain and in the Wanneroo groundwater area. There are three groundwater sub-areas associated with the site: Wanneroo Confined, Mariginiup and Jandabup. This site is part of the Wanneroo groundwater system which comprises of the following hydrogeological units (aquifers), including the:

- Unconfined Superficial aquifer
- Confined Leederville aquifer
- Confined Yarragadee aquifer

Local hydrology is dominated by infiltration and evapotranspiration with almost no runoff due to the highly conductive sandy soils on site (refer Section 2.4.1). Infiltrated rainwater is expected to directly recharge to the Wanneroo groundwater system as it does in the bordering Gnangara groundwater system. Surface water is generally confined to Lake Mariginiup and Little Mariginiup Lake which are surface expressions of the Superficial aquifer in low lying land.

Regional groundwater mapping indicates groundwater across the site generally flows from east to west (DWER, 2023a).

2.11.2. Regional groundwater levels

The Perth Groundwater Map (DWER, 2023a), which provides an indication of regional groundwater levels, shows the historic Maximum Groundwater Level (MGL) at the site to be approximately 43 mAHD on the eastern boundary of the site. The lowest historic MGL on site is approximately 39 mAHD and is mapped in the south-westernmost corner of the site.

2.11.3. Groundwater levels

Several groundwater monitoring bores were installed as a part of a study undertaken by RPS (RPS, 2011). Monitoring was undertaken monthly between September 2009 and October 2010.

Eight groundwater monitoring bores were installed and monitored monthly by Emerge in 2021 with the objective to capture the annual winter peak and for future use undertaking pre- and post-development monitoring. Peak groundwater levels are detailed in Table 4.

Table 4: Pre-development peak groundwater levels (Emerge, 2021)

Bore ID	Easting	Northing	Peak winter groundwater level (mAHD) (calibrated)	Peak winter groundwater level (mAHD)
MB01	386776.391	6490333.755	40.12	40.12
MB02	388681.337	6490089.475	43.76	43.76
MB03	388563.549	6490883.064	43.93	43.93
MB04	387907.767	6490731.772	43.17	48.07
MB05	387123.546	6491074.224	44.11	44.11
MB06	387535.232	6491503.924	42.60	46.26
MB07	388564.692	6491423.921	44.00	44.00
MS7	387224.11	6489706.56	42.04	42.04

Groundwater levels across the site ranged from a minimum 39.2 mAHD (MB01, November 2021) to 47.4 mAHD (MB04, November 2021) during the 5-month monitoring period.

Groundwater contours were produced using monitoring data, with the process involving the removal of outliers (MB04 and MB06 in November and August respectively recorded values 4 to 5 m higher than the previous month) and calibration of monitored data against the historic winter peak recorded at the DWER bore (MS7, WIN ID 61610688, October 1992) (refer Figure 10).

Relative to mapped surface levels, peak groundwater levels ranged from 1.73 metres below ground level (mbgl) at MB01 in September 2021 to a maximum of 25 mbgl at MB06 in July 2021. Contours indicate groundwater generally flows east to west, consistent with regional mapping.



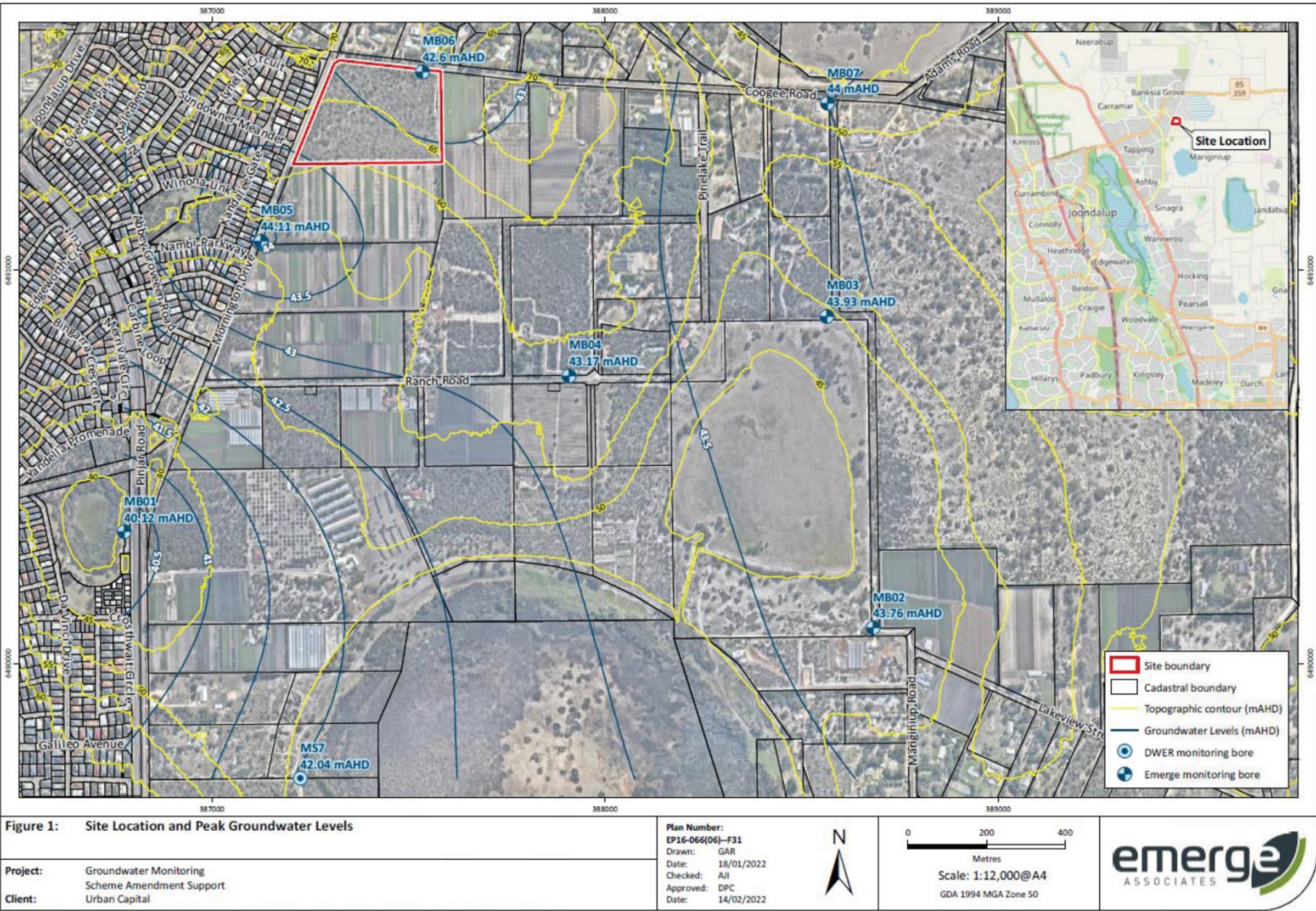


Figure 10: Peak groundwater levels (Emerge, 2021)

2.11.3.1. AAMGL calculation

The 1986 to 1995 AAMGL was determined for the EWDSP area as follows:

- Shallow bores across the EWDSP area were identified from Water Information Reporting data (DWER, 2023b). For this assessment, shallow bores were those in which the top of the screen was less than 15 m below the average 1986 to 1995 water level in the bore. Where there were groups of nested or adjacent bores, the highest screened bore that had a mostly complete set of water level data was selected for the CGL.
- Water level data from these bores was extracted from the Water Information Reporting database (DWER, 2023b).
- 90 shallow screened bores were selected for the estimation of the CGL, 85 of which had 8 or more years of maximum (winter) water levels measured between June and November. For these bores the AAMGL was calculated as the average of the annual maximum water levels.
- The remaining 5 bores had 6 or less years of maximum winter water level data. For these bores the AAMGL was calculated by adjusting the measured maximum water level to an AAMGL, using an average adjustment estimated from the 80 bores that had a complete data record.
- The lakes within the EWDSP area are throughflow wetlands, so are expressions of the groundwater table. An AAMGL was estimated for the lakes that had measured surface water levels over the period from 1986 to 1995, including Lake Mariginiup, Lake Jandabup, Lake Gngangara, Lake Adams, and Lake Badgerup.
- The calculated AAMGL for Lake Mariginiup and Lake Jandabup were compared to the Gngangara Mound Criteria (Government of Western Australia, 2009) and water thresholds presented in both the DWMS (Urbaqua, 2021) and a recent review of the thresholds (Kavazos et al., 2020). The calculated AAMGLs for each of these lakes was within the preferred range of lake water levels (i.e., the AAMGL was above the preferred minimum peak water level (spring) and below the absolute maximum peak).
- The CGL surface was generated by contouring (using a kriging analysis) the bore and lake AAMGL values across the EWDSP area.
- The CGL within the vicinity of Precinct 8 is shown in Figure 11, with depth to CGL across the site shown in Figure 12. Figure 13 shows depth to CGL across the site, highlighting depths to CGL shallower than 5 m.

In the absence of long-term groundwater level data for the site, the 1986 to 1995 AAMGL has been adopted for the site.

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Figure 11: AAMGL/adopted CGL (1986 to 1995)

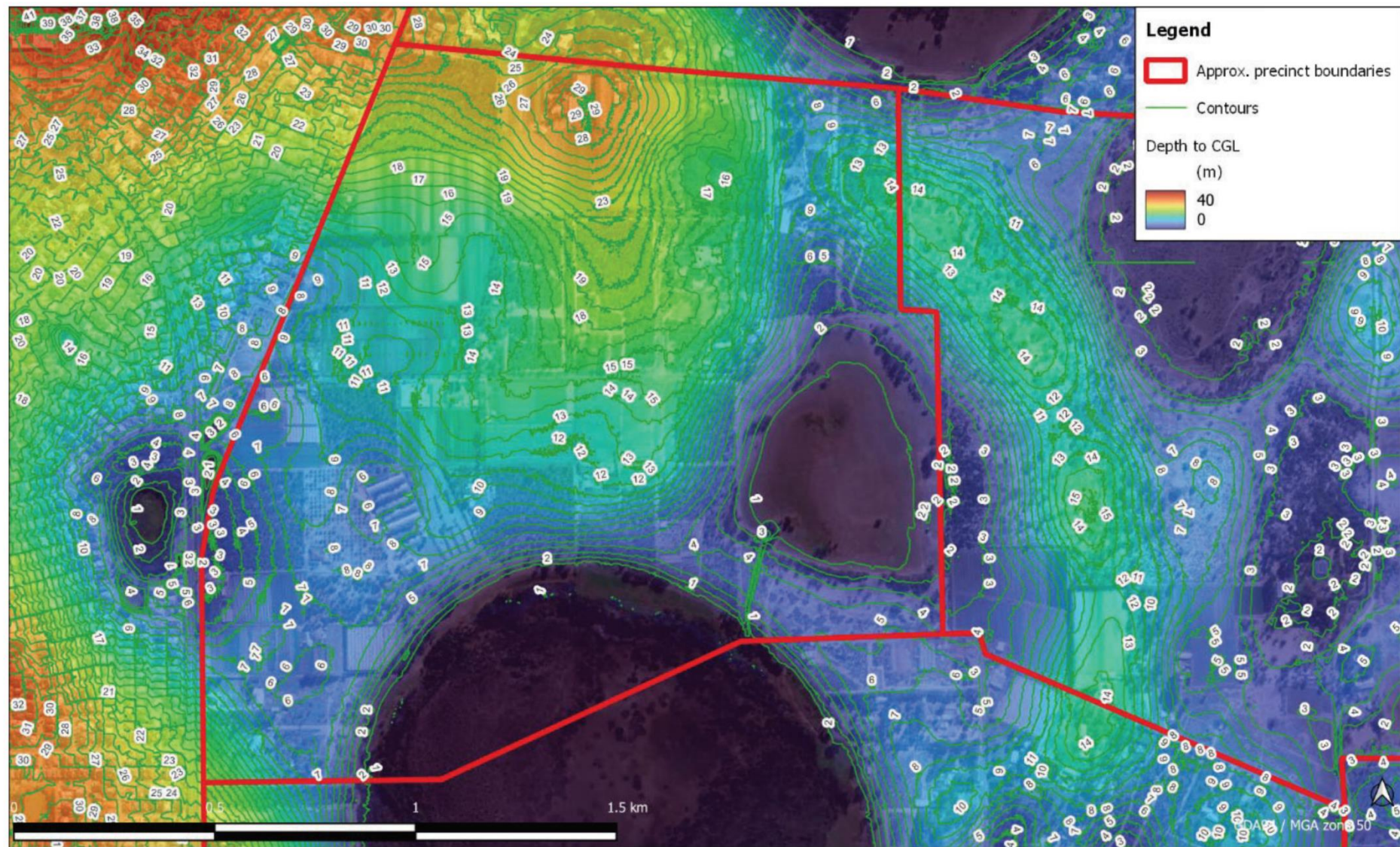


Figure 12: Depth to adopted CGL from existing surface level

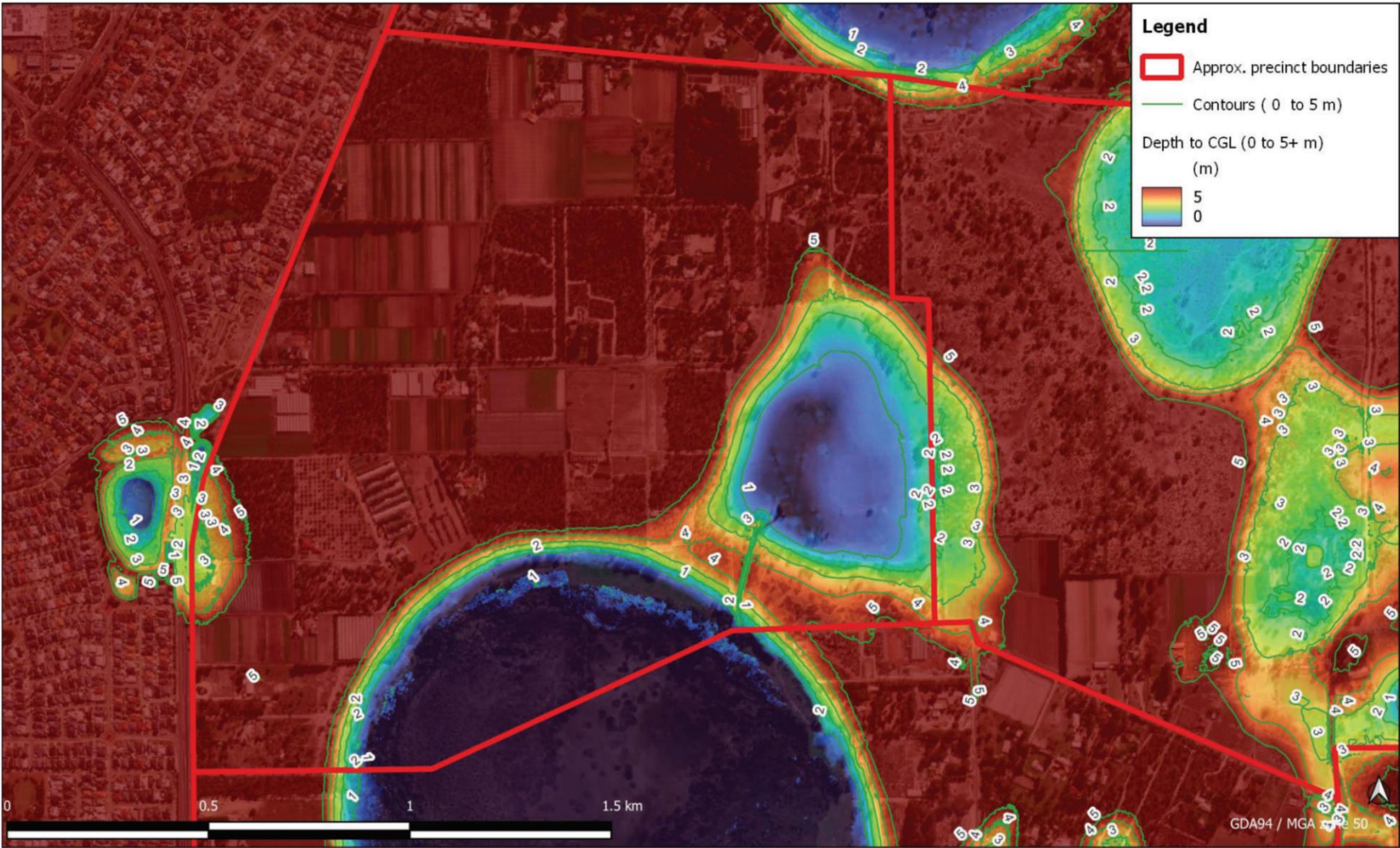


Figure 13: Depth to adopted CGL, showing area with >5 m clearance to surface level



Maximum groundwater levels recorded on site in 2021 (as discussed in Section 2.11.3) were generally consistent with the AAMGL across the site (0.25 m lower in the north-east corner and 2.12 m higher in the south-west corner of the site). As outlined in Section 2.11.3, rainfall recorded for the 2021 at the closest BoM weather station (Wanneroo, BoM 9105) was higher than average historical rainfall (1986 to 2022) across a number of months. As the maximum groundwater levels were recorded in the months following months of high rainfall, and without more recent long-term site-specific groundwater data, it is still recommended that the 1986 to 1995 AAMGL is adopted for the site.

2.11.3.2. MGL discussion

The proposed CGL for the EWDSP area is the 1986 to 1995 average annual maximum groundwater level (AAMGL) as discussed in Section 2.11.3.1 and as was endorsed through the DWMS (Urbaqua, 2021).

2.11.4. Groundwater quality

Two rounds of groundwater quality monitoring were undertaken at the seven Emerge bores in August and October 2021, as detailed in Table 5 below.

Groundwater was generally moderately acidic, exceeding ANZECC (2000) guidelines at all bores except for MB06 and Electrical Conductivity (EC) exceeding ANZECC guidelines at all bores except for MB07. Total Nitrogen (TN) and Total Phosphorus (TP) concentrations in groundwater exceeded all relevant guideline values except for MB03. High TN concentrations can potentially be a result of surrounding land uses where market farms highly populate the sites surrounding area.

No other groundwater quality monitoring is known to have been undertaken within the site.

Table 5: Average site groundwater quality (Emerge, 2021)

Bore ID	pH	EC	DO	TN	TP
	-	µS/cm	mg/L	mg/L	mg/L
ANZECC guideline values	6.5-8	120-300	NG	1.2	0.065
Short-term HRAP target concentrations	-	-	-	2.0	0.2
Long-term HRAP target concentrations	-	-	-	1.0	0.1
MB01	5.445	827.5	1.465	18	4.225
MB02	5.325	517.5	3.01	18.35	0.695
MB03	4.135	968.5	3.23	1.95	0.185
MB04	5.5	488	3.9	4.65	0.875
MB05	5.95	1199.5	3.72	53.3	0.76
MB06	6.835	780.5	2.04	31.8	0.915
MB07	3.68	267.65	0.795	4.55	0.445

NG No Guideline

2.12. Surface hydrology

The site contains two major depression areas: Lake Mariginiup and Little Mariginiup Lake. Surface water flows into these depression areas and does not have a defined drainage system that directs surface water out of the site area. Surface water features are shown in Figure 14.



Figure 14: Site hydrology

2.12.1. Catchment hydrology

Lake Mariginiup and Little Mariginiup Lake are the only mapped natural waterways located on site. These areas as well as a low-lying area in the southwest corner of the site experience minimal separation between land surfaces and groundwater levels.

2.12.2. Pre-development flood modelling

A pre-development 1-dimensional surface water model of the entire East Wanneroo DSP area was constructed to provide an estimate on the likely volumes and top water levels in key wetlands during minor and major flood events (Urbaqua, 2021). It was noted that the increase to top water levels from the storage of surface water in key wetlands (including Lake Mariginiup) from major and minor events was not considered to be significant (Urbaqua, 2021).

2.12.3. Surface water quantity and flow monitoring

Lake level monitoring of Lake Mariginiup has been undertaken at a single surface water monitoring site (WIR ID 6162577) on a roughly monthly basis since 1954 (DWER, 2023b). Monitoring since 2000 indicates lake levels have ranged from dry (approximate surface elevation of 41.3 mAHD) to 41.85 mAHD (recorded in October 2000).

No other known surface water quantity or flow monitoring has been undertaken on site.

2.12.4. Surface water quality monitoring

Surface water quality monitoring of Lake Mariginiup is recorded to have been historically undertaken across a total of 30 monitoring locations, 28 of which were only monitored in 2007, one of which (WIR ID 6162577) has been monitored since 1954 and one of which (WIR ID 6164637) was monitored from October 2013 to October 2022. A summary of water quality analysis is detailed in Table 6.

Table 6: Lake Mariginiup water quality results (DWER 2023b)

Parameter	ANZECC (2000) guideline ^a	Data count	Minimum	Maximum	Average
EC (µS/cm)	NG	30	700	2,900	1,489



Parameter	ANZECC (2000) guideline	Data count	Minimum	Maximum	Average
pH	6.5 – 8.0	61	3.41	7.45	5.09
TSS (mg/L)	NG	3	3	5	3.67
TN (mg/L)	1.5	13	1.6	16.2	5.72
TKN (mg/L)	NG	12	1.5	16.2	5.63
TP (mg/L)	0.05	8	0.01	0.07	0.03

¹ANZECC (2000) Wetland Guidelines for slightly – moderate disturbed ecosystems

NG No Guideline

The water quality results indicate that Lake Mariginiup is strongly acidic, with the average pH exceeding ANZECC (2000) Wetland guidelines for slightly – moderate disturbed ecosystems. All Total Nitrogen (TN) concentrations and the maximum Total Phosphorus (TP) concentration recorded at the lake exceeded the relevant guideline values. Ongoing sampling will be required in future development stages to ensure water quality is not further degraded by development.

3. Water source planning

3.1. Potable water supply

The site is located outside all Underground Water Pollution Control Areas (UWPCA) and the site will be serviced via the existing potable water supply scheme.

3.2. Non-potable water supply

3.2.1. Requirements

As per the water conservation principle of “No potable water should be used outside of homes and buildings with the use of water to be as efficient as possible” in *Better Urban Water Management* (WAPC, 2008).

3.2.2. Irrigation demand analysis

The irrigation demand for Precinct 8 is estimated as 197,608 kL/year, as detailed in Table 7. The estimates are based on an irrigation rate of 7,500 kL/Ha/year for irrigated POS and school areas, and 10,000 kL/Ha/year for the school oval. The POS areas presented in Table 7 exclude areas of retained vegetation, playgrounds, and large hardstand or paved spaces located within those POS areas.

Qube Pinelake Development Pty Ltd currently hold an annual groundwater allocation of 33,050 kL, however the use of this licence needs to be confirmed and will need to be supplemented to cover the residual irrigation demand. It is anticipated that current groundwater licence holders will trade or transfer their licences as urban development progresses across the precinct and land use changes from market gardens to urban development.

Table 7: Irrigation demand estimate

	Total Area (Ha)	Irrigation % of area	Irrigated Area (Ha)	Irrigation Rate (kL/Ha/yr)	Total Water Demand (kL/yr)
Public Open Space	25.69	90%	23.12	7,500	173,408
School	2.80	20%	0.56	7,500	4,200
Co-located School oval	2.0	100%	2.0	10,000	20,000
Total	30.49	-	25.68	-	197,608

3.2.3. Groundwater allocation availability

The DSP site is located within the Wanneroo groundwater area. The following aquifers are present in the area:

- Perth – Superficial Swan (Unconfined, Mariginiup subarea).
- Perth – Leederville (Confined, Wanneroo Confined subarea).
- Perth – Yarragadee North (Confined, Wanneroo confined subarea).

Pentium Water has completed an analysis of the currently available groundwater allocations in the underlying aquifers (within Precinct 8) and adjoining groundwater subareas. Pentium Water requested a groundwater resource allocation report from DWER on 28 August 2023, which is a document that outlines the groundwater allocation status. No groundwater resources are available for allocation in the aquifers beneath Precinct 8 (the Mariginiup groundwater subarea as illustrated in Figure 15). No groundwater allocation will be made available by DWER, and no new groundwater licence will be provided to Qube for the irrigation of POS within Precinct 8 as it currently stands.

Figure 15 below shows Precinct 8 including the groundwater subarea and the groundwater licence areas respectively. The Mariginiup groundwater licence areas outline the current



groundwater licences within Precinct 8 that could be traded or transferred to Qube. The details of these existing licences are outlined in Table 8.

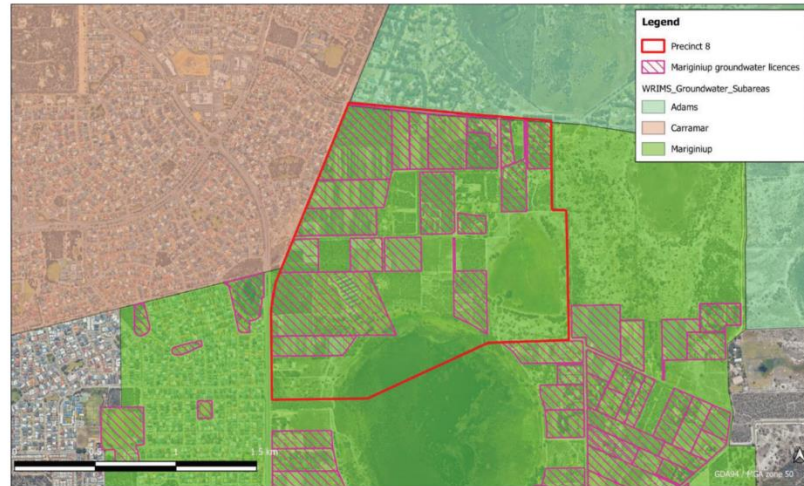


Figure 15: Groundwater subareas

3.2.4. Groundwater allocation transfers or licence trading

There are mechanisms in place for trading and transfers of groundwater licences under the *Right in Water and Irrigation Act 1914*. Each application is assessed on an individual, transparent, and equitable basis in accordance with the requirement of the Act.

It is noted that groundwater licences within Precinct 8 are associated predominantly with market garden activities. Given the proposed development of the area will require a change in land use from market gardening to residential development, it can reasonably be expected the transition via a trade or transfer of these groundwater licences (from the horticulturalists) to be available for transfer to the Precinct's land development proponents or directly to the City of Wanneroo for future irrigation requirements.

The licences outlined in Table 8 could be transferred to Qube should Qube continue to acquire land within Precinct 8. Alternatively, Qube could look to trade for these licences with the existing owners outside of a land acquisition deal.

Table 8: Groundwater licences within Precinct 8 and their respective subareas

Lot number	Owner(s) & Licence Address	Groundwater Licence Number(s)	Groundwater Allocation (kL)	Aquifer	Subarea
L1	Do, Thanh Thinh; Lot 1 Pinjar Rd, Mariginiup	78896	56,900	Superficial	Mariginiup
L39	Lenzo Investments Pty Ltd; Lot 39 Pinjar Rd, Mariginiup	45534	106,550		
L250, L1 and L7	Do, Thuong Le, Dinh, Thanh Duc; Lot 250 Ranch Rd, Lot 1 Ranch	153426	148,200		

Lot number	Owner(s) & Licence Address	Groundwater Licence Number(s)	Groundwater Allocation (kL)	Aquifer	Subarea
	Rd and Lot 7 Coogee Rd, Mariginiup				
L3	Marinovich, John; Lot 3 Ranch Rd, Mariginiup	157853	45,650		
L4	Staltari, Guiseppe; Lot 4 Ranch Rd, Mariginiup	93599	63,000		
L11	Western Australian Planning Commission; Lot 11 Ranch Rd, Mariginiup	45431	6,300		
L3	Tran, Van Hua; Lot 3 Mornington Dr, Mariginiup	89920	102,000		
L5 and L4	Urban Capital Carramar Pty Ltd; Lot 5 Mornington Dr and Lot 4 Mornington Dr, Mariginiup	151330	34,905		
L101, L501, L502, L503 and L504	Danti, Eric Peter, Danti, Anne Lesley; Lot 101, 501, 502, 503 and 504 Honey St, Mariginiup	49704	30,750		
L102	Urban Capital Carramar; Lot 102 on Plan 29470 and being the whole of the land comprised in Certificate of Title Volume 2520	108196	56,050		
L7	Chrispi Investments Pty Ltd; Lot 7 Coogee Rd, Mariginiup	66754	68,150		
L21	Harken, Edward, Zanetic, Sally; Lot 21 Pinelake Trail, Mariginiup	89279	15,150		
L20	Qube Pinelake Development Pty Ltd; Lot 20 Coogee Rd, Mariginiup	83336	33,050		
L24	JIWA Holdings Pty Ltd as trustee for the JIWA Unit Trust; Lot 24 Coogee Rd, Mariginiup	207381	4,000		
L6	Schad, Thomas, Schad, Marion; Lot 6 Coogee Rd, Mariginiup	58317	9,750		



Lot number	Owner(s) & Licence Address	Groundwater Licence Number(s)	Groundwater Allocation (kL)	Aquifer	Subarea
L3	Coogee Road Investments Pty Ltd; Lot 3 Coogee Rd, Mariginiup	57186	15,200		
Total Allocation available in the superficial aquifer within Precinct 8 (excluding the licence already held by Qube)			762,555 kL/yr		

3.3. Wastewater servicing

The site, as well as all developments within the East Wannonroo DSP area, are to comply with the requirements of the *Government Sewerage Policy* (DPLH 2019). Facilities across the site (POS, residential lots etc.) are proposed to be connected to deep sewerage (refer Engineering Servicing Report included in Appendix C).

4. Water conservation strategies

4.1. Proposed strategy

The State Water Plan (2007) is a strategic policy and planning framework to meet the state's water demands to the year 2030. One of the key targets is to reduce potable water consumption to 40 kL–60 kL per person per year. Water conservation measures will be adopted at the site to create a “Waterwise” development and minimise water-servicing requirements. The water conservation strategy will aim to reduce water demand through incorporating a variety of effective initiatives. These are described in more detail below.

4.2. Water conservation measures

The development will adopt the following water conservation measures:

- A Waterwise landscaping strategy which utilises largely native plant species with limited exotic species in select areas only to provide feature planting.
- Front yard Waterwise landscaping packages may be promoted to new home buyers. These may include the use of plant species with low water requirements, minimal turf, mulch, and soil conditioner to increase water retention.
- An outdoor private swimming pool or spa associated with a Class 1 building must be supplied with a cover or blanket.
- All internal hot water outlets (such as taps, showers and washing machine water supply fitting) must be connected to a hot water system or a recirculating hot water system with pipes installed and insulated in accordance with AS/NZS3500.
- Lot owners will be encouraged to install greywater systems for irrigation of individual household landscaping.
- Lot owners will also be encouraged to install rainwater tanks. Rainwater tanks can be connected to water using fixtures such as toilets, washing machines and external taps to reduce potable water demand.

4.3. Water appliances and fittings

As a minimum, builders will be required to fit Waterwise appliances and fittings within all display homes at the site. This will include the use of water efficient taps, showers, and water heating systems as well as Waterwise garden designs and irrigation schemes. Educational material will be made available via the use of education boards and pamphlets within display homes.

4.4. Waterwise landscaping

Landscape plans for POS areas will be provided at subdivision stage which detail the proposed landscape treatments, plantings, community facilities and integration of drainage areas with the POS landscape design. A preliminary landscape design is provided in Appendix E.

The following general principles will be adopted wherever possible in the landscape design:

- Promote the use of native plants with low water and fertiliser requirements.
- Promote landscape treatments sympathetic to climate conditions and prevailing site conditions – e.g. soil types, topography, environment, wetlands etc.
- Utilise “cluster or clump” plantings to provide useable shade areas and better use of reticulated water in preference to single item or symmetrical planting regimes.
- Irrigate grass and garden areas at appropriate time so as to reduce evaporative loss and minimise transpiration losses.
- Ensure that irrigation regime is responsive to prevailing weather conditions.



5. Stormwater management

5.1. Drainage principles and criteria

The key aspects and principles of stormwater management to be adopted for the site as outlined in the DWMS (Urbaqua, 2021) are outlined below:

- Small rainfall events are to be managed at source (in lots and streets) wherever possible.
- All small event stormwater management systems are to be accommodated outside of retained wetlands and their buffers.
- Where the depth to groundwater is limited and subsurface drainage systems are required, the design of at source stormwater infiltration systems should be informed by consideration of the interaction between infiltrated stormwater and the CGL.
- Where it is not feasible to retain or infiltrate small rainfall events at source without impacting amenity, the use of systems such as rainwater tanks, raingardens and detention tanks should be considered as alternatives to more traditional systems.

The key design criteria for the site are outlined in Table 9 and have been established in accordance with the design objectives outlined in Section 1.5. The preliminary drainage catchment plans and concept earthworks engineering design are presented as Appendix D.

Table 9: Water management objectives and how these will be achieved.

Objective	Design criteria
Stormwater	
Ecological protection (15 mm event)	<ul style="list-style-type: none">▪ The aim of 1 EY-45 minutes (~15 mm) storm event is to capture and treat the first flush of rainfall runoff from lots and road reserves to minimise the export of pollutants.▪ Maintain the pre-development hydrological regime by encouraging infiltration close-to-source. Manage the 15mm rainfall depth through infiltration, retention and/or treatment.
Conveyance (20% AEP event)	<ul style="list-style-type: none">▪ Provide sufficient drainage system capacity for the critical 20% AEP (5-year ARI) event to maintain serviceability of roads and pedestrian areas.▪ Runoff to be detained an infiltrated via trapped basins, or outlet into Little Mariginiup Lake or Lake Mariginiup.
Flood protection (1% AEP event)	<ul style="list-style-type: none">▪ Provide adequate flood retention storage.▪ Runoff to be detained an infiltrated via trapped basins, or outlet into Little Mariginiup Lake or Lake Mariginiup.▪ Habitable floor levels to be at least 0.3 m above the 1% AEP flood level of the urban drainage system and road reserve, and a minimum of 0.5 m above the floodplain levels in Lake Mariginiup, Little Mariginiup Lake and trapped low basins.▪ Roads will be passable with a maximum water depth on the road pavement of 0.2 m.▪ Runoff in the critical 1% AEP event from the site into Lake Mariginiup and Little Mariginiup Lake will result in an increase flood depth of 0.63 m and 0.33 m respectively. Stormwater modelling indicates that both lakes have capacity to receive this runoff without presenting any flood risk to adjacent landholdings.
Mosquito management	<ul style="list-style-type: none">▪ Swales and basins will be designed so that retained stormwater will be infiltrated within 96 hours following storm events to prevent mosquito and midge breeding conditions.
Groundwater	
Groundwater level control	<ul style="list-style-type: none">▪ Finished lot levels within the site will have a minimum clearance from CGL of approximately 3 m.▪ Basin inverts will generally have a clearance of at least 2 m from CGL.

Objective	Design criteria
Stormwater	
Nutrient management	<ul style="list-style-type: none">▪ The swales and basins will be designed to retain nutrients using amended soils and appropriate plant species selection.

5.2. Post development catchments

Post development, the site will consist of 30 stormwater catchments as presented in Figure 16 and Table 10. The concept earthworks design and preliminary drainage catchment plan (JDSi 2023) is provided in Appendix D.

Surface water catchments located within the site are characterised as either trapped or discharging. Runoff generated in trapped catchments will be managed in retention basins which are sized to store and infiltrate up to the 1% AEP event. The first 15 mm of runoff generated in discharging catchments will be treated in bioretention basins and in larger events runoff will discharge into Little Mariginiup Lake or Lake Mariginiup.

The land use breakdown within each catchment is detailed in Table 10 below.



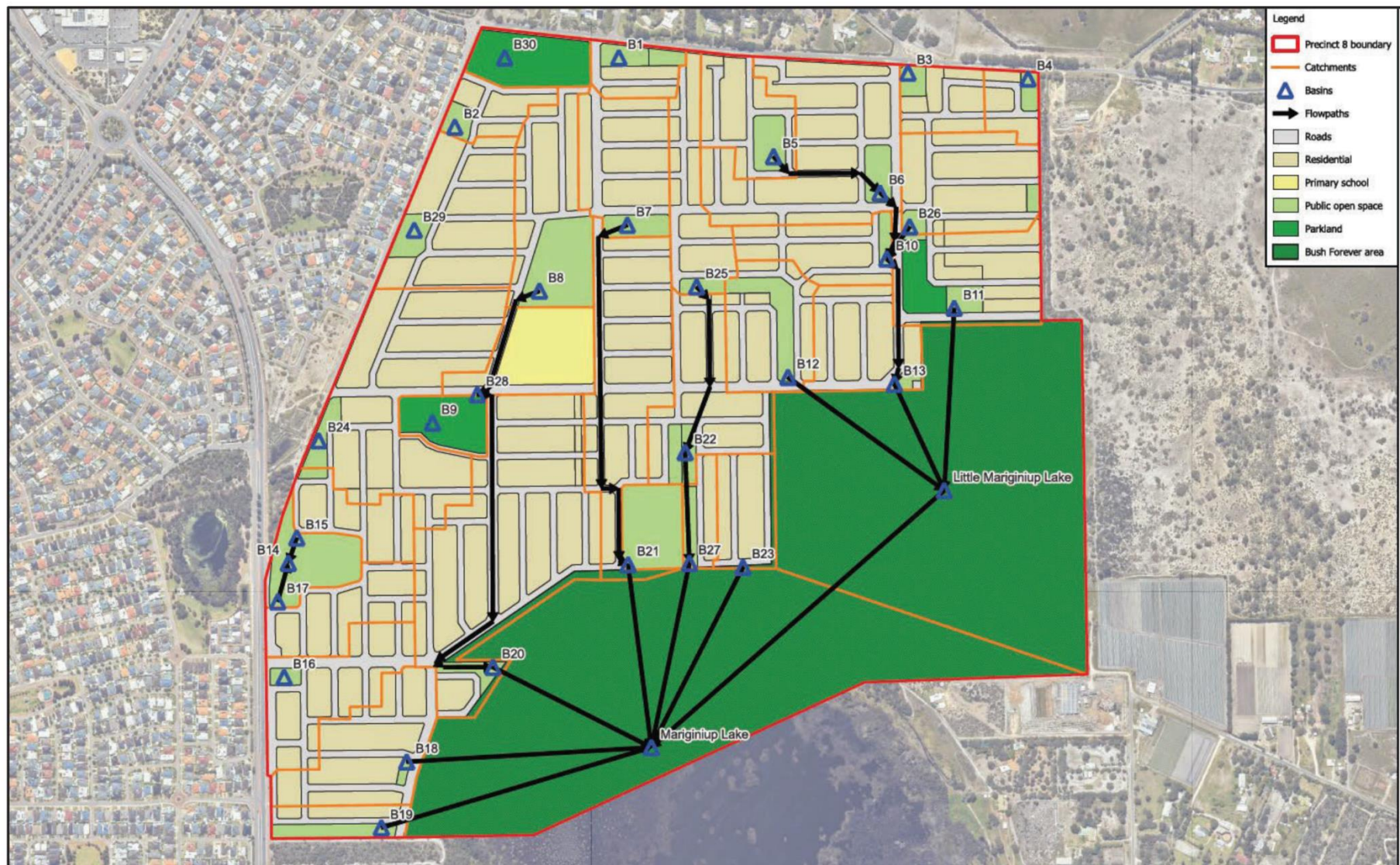


Figure 16: Catchment areas and basin locations

Table 10: Post development land use breakdown

Basin ID	Total area (ha)	POS/ Drainage (ha)	Tree Reserve / Wetland (ha)	Road reserve (ha)	Residential and school lots (ha)
B1	2.416	0.8688	0	0.464	1.083
B2	2.431	0.441	0	0.597	1.393
B3	2.561	0.415	0	0.644	1.502
B4	1.946	0.323	0	0.487	1.136
B5	4.719	0.896	0	1.147	2.676
B6	11.847	0.7606	0	3.326	7.760
B7	6.186	0.7545	0	1.629	3.802
B8	7.334	2.7835	0	1.365	3.185
B9	2.086	0	2.086	0	0
B10	4.359	0.3276	0	1.209	2.822
B11	6.206	0.418	1.1392	1.395	3.254
B12	5.523	1.2757	0	1.274	2.973
B13	5.638	0.2231	0	1.624	3.790
B14	2.953	0	2.953	0	0
B15	3.371	0	0	1.011	2.360
B16	5.316	0.2782	0	1.511	3.526
B17	4.245	0	0	1.274	2.972
B18	5.993	0.5292	0	1.639	3.825
B19	3.478	0.3435	0	0.940	2.194
B20	20.373	0.4016	0	5.991	13.980
B21	10.748	0	0	3.224	7.524
B22	7.308	0.8	0	1.952	4.556
B23	3.362	0.2	0	0.949	2.213
B24	13.835	0.526	0	3.993	9.316
B25	4.762	0.347	0	1.325	3.091
B26	6.895	0.306	0	1.977	4.612
B27	1.784	0.596	0	0.356	0.832
B28	4.491	0	0	1.347	3.144
B29	8.145	0.401	0	2.323	5.421
B30	3.129	0	3.129	0	0

5.3. Stormwater management strategy

5.3.1. Minor drainage system including the small (15mm) event

5.3.1.1. Lot drainage >300 m²

Residential lots greater than 300 m² in size will be fitted with soakwells within the lot boundary sized to infiltrate the first 15 mm of rainfall.

5.3.1.2. Road reserve

Road runoff will drain to at-source infiltration solutions (i.e. rain gardens, tree pits) swales or to basins via a pit and pipe system that will provide bioretention treatment for up to the first 15 mm of rainfall runoff.

Managing small rainfall events via close-to-source infiltration will effectively mimic the pre-development hydrological regime of the site and reduce both the volume and peak flow rate of stormwater discharging into Lake Mariginiup or Little Mariginiup Lake.

5.3.1.3. Other land use types

The first 15 mm of rainfall from schools or other land use types will be retained within the lot boundaries using soak wells, rainwater tanks or other WSUD methods.

5.3.1.4. Bioretention treatment

The effective impervious area was calculated within each catchment as 10% of residential and school lots; and 80% of road reserve area, as summarised in Table 11. Bioretention treatment will be provided for the first 15 mm of rainfall that falls on effective impervious areas and runoff will be treated and infiltrated within bioretention basins.

The proposed bioretention basin area within the site totals 1.2432 ha which equates to more than 2% of the total effective impervious. Infiltration rates assumed within each basin based on the infiltration testing. Infiltration rates and bioretention basin sizing is detailed in Table 13.

Table 11: Effective impervious area for bioretention treatment

Catchment	Effective impervious area (ha)
B1	0.4795
B2	0.6169
B3	0.6654
B4	0.5032
B5	1.1852
B6	3.4368
B7	1.6834
B8	1.4105
B9	0
B10	1.2494
B11	1.4414
B12	1.3165
B13	1.6782
B14	0
B15	1.0448
B16	1.5614
B17	1.3164
B18	1.6937



B19	0.9714
B20	6.1908
B21	3.3316
B22	2.0172
B23	0.9805
B24	4.126
B25	1.3691
B26	2.0428
B27	0.368
B28	1.392
B29	2.4005
B30	0
Total	46.4726

5.3.2. Major drainage system

The roadside pipe and pit network and swales will be sized to convey the 20% Annual Exceedance Probability (AEP) event. In larger events runoff may be conveyed within the road reserves, with a maximum depth of 0.2 m in the 1% AEP event.

Stormwater modelling was undertaken using XPSWMM software. Bioretention basins were sized for trapped and discharging catchments for storage and infiltration of the first 15 mm event. Trapped catchment basins were sized for storage and infiltration of up to the 1% AEP event.

The loss rates adopted for each land use type is detailed in Table 12. The infiltration rates adopted based on the infiltration testing results and are detailed in Table 13.

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Table 12: Uniform Loss rates

	Drainage/ POS	School	Road reserve	Residential (R30-40) >300m2
Initial Loss (mm)	20	15	3	15
Absolute loss (mm)	2	3	1	3

5.4. Non-structural controls

Non-structural controls to improve stormwater quality includes vegetation to be incorporated into the drainage areas to help prevent erosion, maintain infiltration, restrict water scouring, and remove particulate and soluble pollutants. Native species will be selected based on their intended purpose, predominantly being for nutrient removal, and will be in accordance with the *Vegetation guidelines for stormwater biofilters in the south-west of Western Australia* (Monash University 2014). The landscape plans provide further vegetation details and are provided in Appendix E.



5.5. Basin Sizing Modelling Results

The bioretention treatment and flood storage areas required within each catchment and is detailed in Table 13 below.

Table 13: Basin design details

Basin ID	Trapped or discharging	Basin shape	Adopted infiltration rate (m/day)	First 15 mm basin design				20% AEP basin design				1% AEP basin design			
				Side slopes	Total depth (m)	Volume (m3)	Top area (m2)	Side slopes	Total depth (m)	Volume (m3)	Top area (m2)	Side slopes	Total depth (m)	Volume (m3)	Top area (m2)
B1	Trapped	Square	3	1 in 3	0.3	50	190	1 in 6	0.5	190	830	1 in 6	1.2	946	1354
B2	Trapped	Square	0.75	1 in 3	0.3	76	282	1 in 6	0.52	360	1450	1 in 6	1.2	1554	2098
B3	Trapped	Square	5	1 in 3	0.3	50	190	1 in 6	0.54	191	680	1 in 6	1.2	785	1142
B4	Trapped	Square	5	1 in 3	0.3	43	164	1 in 6	0.54	148	550	1 in 6	1.2	633	950
B5	Discharging	Square	5	1 in 3	0.3	86	317	Overtops into roadside drainage network							
B6	Discharging	Square	5	1 in 3	0.3	268	949								
B7	Discharging	Square	5	1 in 3	0.3	131	475								
B8	Discharging	Square	5	1 in 3	0.3	107	392								
B9	Trapped Retained bushland	Existing	2.3	NA	0	0	0	NA	0	0	0	NA	0	0	0
B10	Discharging	Square	5	1 in 3	0.3	96	353	Overtops into roadside drainage network							
B11	Discharging	Square	5	1 in 3	0.3	102	372								
B12	Discharging	Square	5	1 in 3	0.3	102	372								
B13	Discharging	Swale	5	1 in 3	0.3	131	475								
B14	Trapped	Existing	1	NA	0	0	0	NA	0	0	0	NA	0.39	2565	7000
B15	Trapped and discharging	Square	5	1 in 3	0.3	67	250	1 in 6	0.6	334	999				
B16	Trapped	Square	5	1 in 3	0.3	76	282	1 in 6	0.48	328	1540				
B17	Trapped and discharging	Square	5	1 in 3	0.3	76	282	1 in 6	0.6	380	1129				



Basin ID	Trapped or discharging	Basin shape	Adopted infiltration rate (m/day)	First 15 mm basin design				20% AEP basin design				1% AEP basin design			
				Side slopes	Total depth (m)	Volume (m3)	Top area (m2)	Side slopes	Total depth (m)	Volume (m3)	Top area (m2)	Side slopes	Total depth (m)	Volume (m3)	Top area (m2)
B18	Discharging	Square	5	1 in 3	0.3	119	433	Overtops into roadside drainage network							
B19	Discharging	Square	5	1 in 3	0.3	76	282								
B20	Discharging	Swale	5	1 in 3	0.3	459	1607								
B21	Discharging	Square	5	1 in 3	0.3	268	949								
B22	Discharging	Swale	5	1 in 3	0.3	155	562								
B23	Discharging	Square	5	1 in 3	0.3	75	295								
B24	Trapped	Square	2.3	1 in 3	0.3	201	718	1 in 6	0.47	1114	5920	1 in 6	1.2	6028	7362
B25	Discharging	Square	5	1 in 3	0.3	102	372	Overtops into roadside drainage network							
B26	Discharging	Square	5	1 in 3	0.3	138	497								
B27	Discharging	Swale	5	1 in 3	0.3	34	134								
B28	Discharging	Swale	5	1 in 3	0.3	100	409								
B29	Trapped	Square	2.3	1 in 3	0.3	234	829	1 in 6	0.39	141	3390	1 in 6	1.2	3747	4597
B30	Trapped Retained bushland	Existing	0.75	NA	0	0	0	NA	0	0	0	NA	0.05	485	10000



5.6. Flood risk for trapped catchments with low clearance to groundwater

Pentium Water has undertaken an assessment of the flood risk presented in specific catchments of the development in a scenario where groundwater levels rise to the proposed Controlled Groundwater level (CGL) and no district scale groundwater pumping system has been implemented.

This trapped catchment assessment focused on stormwater basins which will have a clearance to CGL of less than 3 m and do not overtop into Lake Mariginiup or Little Mariginiup Lake include B4, B24, B14, B15, B16 and B17 (Figure 16). If groundwater levels were to rise, then the infiltration rates in these basins will be less than the design rates specified in Table 13.

If the infiltration rates in basins B24, B15, B16 and B17 was limited due to groundwater rise, then it is likely that in large storm events runoff will exceed the capacity of these basins and will be conveyed via the road reserves to B14 retained vegetation area, and potentially discharge over Pinjar Road into Da Vinci Park REW in large rainfall events.

If the infiltration rate in basin B4 was reduced, then it is likely that in large storm events runoff will overtop the basin and discharge over Coogee Road and into Lake Adams.

5.7. Cumulative Impacts to Lake Water Levels from other precincts

Pentium Water has undertaken an assessment of the cumulative flood risk presented to developments surrounding Lake Mariginiup based on the likely drainage catchment for the precincts across East Wimmeroo. The drainage catchment for Lake Mariginiup was largely defined in the DWMS and the Little Mariginiup Lake and Lake Mariginiup catchment boundaries are presented in Figure 17. The majority of the site (Precinct 8) as well as external precinct areas drain into Lake Mariginiup.

The catchment areas, modelled flood depths and volumes within Lake Mariginiup and Little Mariginiup Lake are detailed in Table 14.

A cumulative assessment of all stormwater entering the lakes has been undertaken to determine the likely instantaneous lake level increase based on a significant rainfall event. The assessment revealed that a maximum flood depth in the 1% AEP event is 0.33 m and 0.63 m in Lake Mariginiup and Little Mariginiup Lake respectively. The assessment indicated that the cumulative impact or instantaneous lake water level rise in a 1% AEP rainfall event does not present a significant flood risk to the future development surrounding the lakes. This assessment is based on the current lake levels, the likely future lake water levels based on a controlled groundwater level, future lake water levels assuming wet future climate scenarios, and referencing the proposed earthworks level of Precinct 7 and 8.

Table 14: Lake Mariginiup and Little Mariginiup hydrology

Lake ID	Catchment area (ha)	Infiltration rate (m/day)	First 15 mm		20 % AEP (5 year) event		1% AEP (100 year) event	
			Max Depth (m)	Max Volume (m3)	Max Depth (m)	Max Volume (m3)	Max depth (m)	Max Volume (m3)
Lake Mariginiup	622	0	0.01	10,835	0.09	130,029	0.33	485,673
Little Mariginiup Lake	118	0	0.00	0	0.18	15,121	0.63	68,797

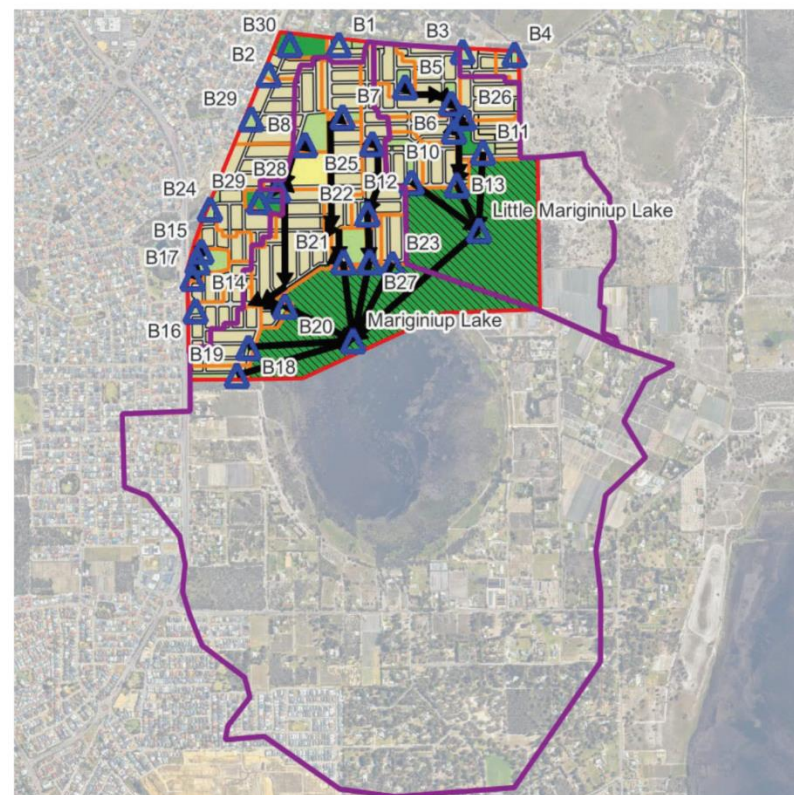


Figure 17: Lake Mariginiup and Little Mariginiup Lake Catchment boundaries (purple line)



6. Groundwater management

6.1. Overview

A district groundwater management scheme will control post-development groundwater level rise through subsoil drainage in areas that are likely to have shallow depth to groundwater. The groundwater management scheme is to be informed by a detailed groundwater model and concept engineering design that is currently under development. In the absence of the groundwater model results and the groundwater management scheme design, planning must follow requirements stipulated in the DWMS (Urbaqua, 2021).

6.2. Groundwater control

The DWMS proposed the CGL be represented by the 1986 to 1995 AAMGL, but notes:

The impacts of using an AAMGL rather than MGL (maximum groundwater level) as the CGL near wetlands and important environmental values will require further consideration when detailed modelling is undertaken for the preparation of the local water management strategy for each precinct.

The DWMS also states:

Where local structure planning is proceeding in advance of the detailed local groundwater modelling being available, the local structure plan must:

- *Install groundwater management systems (subsoil drains) at invert levels based on the determined controlled groundwater level (CGL) in areas where the predicted future groundwater level is within 2m of the future*

The CGL and subsoil drainage extent have been assessed in accordance with the requirements specified in the DWMS.

6.2.1. Controlled Groundwater Level (CGL)

The proposed CGL for the East Wanneroo DSP area is considered appropriate for Precinct 8 without adjustment. The majority of the site has more than 5 m clearance to groundwater as presented in Figures 12 and 13.

Several surface water infiltration basins have been identified across the site. The DWMS specifies that subsoil drainage is to be at the CGL, and the subsoil drainage pipework will underlie the surface water infiltration basins where there is insufficient clearance to groundwater.

6.2.2. Subsoil requirements

Given the relatively large separation between the design surface and the proposed CGL, it is not anticipated that subsoil drainage is a significant design constraint for Precinct 8. However, subsoils may be installed beneath parts of the site with lower clearance to CGL as a contingency against rising groundwater levels.

6.3. Groundwater modelling

No specific groundwater modelling has been undertaken to provide groundwater level comparisons between “no-development” and “post-development” model scenarios as it is understood this work is being completed by DPLH. The proponent for Precinct 8 understands that modifications to the drainage design and earthworks design may be required following the upcoming Groundwater Management Scheme design process.

6.4. Groundwater management responses

It is understood that Precinct 8 is highly likely to not required subsoil drainage to control groundwater levels based on predicted groundwater level rise outputs from DPLH's groundwater modelling considering land use change and future climate scenarios. However, should subsoil drainage be required then subsoil drains will be located beneath road

reserves and POS areas to aid infiltration. The detailed design of the subsoil drainage network has not yet been undertaken and will be confirmed with DPLH and their consultants assessing groundwater management.

The DWMS describes a groundwater management scheme that will be controlled by subsoil drainage. Precinct 8 is an undulating area with internal draining to two depression areas (Lake Mariginiup and Little Mariginiup Lake). The project team understands that these internally draining catchments will be governed by the groundwater harvesting scheme and associated lake water level controls.

The current earthworks design and drainage design allows for catchments to drain to low points in the landscape (primarily the lakes) where it is anticipated a pumping system will abstraction or transfer stormwater to a disposal or final use location.

The current urban design and engineering drainage design supports flexibility in response to the future groundwater management scheme and is consistent with the known design principles. The urban design responds to the likely infrastructure demands and land take of the groundwater management scheme.



7. Monitoring requirements

7.1. Pre-development monitoring

The pre-development monitoring has been completed across the Precinct 8 development. Details are provided in Section 2.11.3 and 2.11.4.

7.2. Post-development monitoring

It is understood that the Develop Contribution Plan will fund the district scale water level and quality monitoring program as was specified in the DWMS. However, it is still anticipated that local scale water monitoring will be required. Once the district scale plan is published and understood, the post-development monitoring commitments can be better defined in future Urban Water Management Plans UWMPs. In the interim, the stand-alone post-development monitoring commitments are identified below.

Post-development monitoring will be carried out at the site to detect changes to water quality and verify the performance of the proposed management strategies. The proposed period for post-development monitoring is no less than 3 years following practical completion, as outlined in the DWMS (Urbaqua, 2021). Additional monitoring may be required at the site and should be confirmed with DWER.

Post-development groundwater quality and level monitoring will occur from eight bores. Bores that were monitored pre-development will attempt to be located for post-development monitoring. Where bores have been either destroyed or are no longer available for use, a new bore is to be installed in a location as close as possible to the original bore to ensure consistency in the monitoring regime.

Groundwater quality monitoring will occur on a quarterly basis. Groundwater samples will be analysed for the same parameters as predevelopment.

Groundwater level monitoring will occur monthly during winter (June to October) and quarterly during the rest of the year.

Surface water level and quality monitoring will be undertaken within Lake Mariginiup at two locations, and within Little Mariginiup Lake at one location from the site on a quarterly basis. Surface water samples will be analysed for the same parameters as predevelopment.

7.3. Trigger values

Groundwater and surface water Total Nitrogen (TN) and Total Phosphorus (TP) water quality monitoring results will be compared to the baseline values obtained from the pre-development monitoring.

Groundwater trigger values are detailed in Table 12 and were calculate as the predevelopment average plus 20%.

Surface water trigger values are detailed in Table 13. The surface water TN trigger value was calculated as the predevelopment average plus 20%, and the TP trigger value adopted is the ANZECC guideline (ANZECC 2000) value.

If TN or TP in groundwater or surface water samples exceed the trigger values for two consecutive sampling occasions, contingency measures identified below shall be employed. Consideration will be given to the source of the potential water quality exceedances to determine whether the exceedance is site specific or originating from outside the site.

Table 15: Post development groundwater quality trigger values

Bore ID	Total Nitrogen Predevelopment Average (mg/L)	Trigger	Total Phosphorus Predevelopment Average (mg/L)	Trigger
ANZECC guideline values	1.2		0.065	

Bore ID	Total Nitrogen Predevelopment Average (mg/L)	Trigger	Total Phosphorus Predevelopment Average (mg/L)	Trigger
Short-term HRAP target concentrations	2.0		0.2	
Long-term HRAP target concentrations	1.0		0.1	
MB01	18	21.6	4.225	5.07
MB02	18.35	22.02	0.695	0.834
MB03	1.95	2.34	0.185	0.222
MB04	4.65	5.58	0.875	1.05
MB05	53.3	63.96	0.76	0.912
MB06	31.8	38.16	0.915	1.098
MB07	4.55	5.46	0.445	0.534

Table 16: Post-development surface water quality trigger values

Parameter	ANZECC (2000) guideline	Predevelopment Average	Trigger
TN (mg/L)	1.5	5.72	6.864
TP (mg/L)	0.05	0.03	0.05

7.4. Contingency measures

In the event post-development data exceeds trigger values by at least 20% on two consecutive occasions, an immediate re-sampling will be undertaken to verify the exceedance. If this confirms a deterioration in water quality then an investigation will be undertaken to establish the likely cause of the exceedances, the most likely impacts, and available remedies.

The primary contingency measure available in the event of deterioration in water quality will include assessment of whether the pollution is a point or diffuse source. This will require an investigation into the location of the contamination and an assessment of whether the pollution is due to the development or an external factor. At that point, a specific contingency plan will be implemented, which may include:

- Removal of the pollution
- Assessment into the functionality of the drainage system and bio-infiltration areas
- Further soil amendment in infiltration / treatment areas
- Increased planting of nutrient stripping vegetation in infiltration areas
- Review of drainage maintenance plans to ensure correct practices are being implemented
- Increased public awareness and education programs
- Increased monitoring program including monitoring up-gradient of the site to determine potential off-site nutrient sources.

7.5. Reporting

Annual reporting is proposed to review the post-development monitoring program and recommend revisions where necessary to improve understanding of surface water and groundwater systems.

The results obtained from post-development monitoring will be compared to pre-development monitoring data and ANZECC guidelines (ANZECC, 2000) and submitted annually to the City. The report will outline and impact the development has had on the



hydrological conditions and water quality and present necessary contingency measures where required.

8. Further investigations

8.1. Further work

The preparation of Urban Water Management Plans (UWMPs) will be required as a condition of subdivision approval and will include the following design measures in more detail:

- Compliance with this LWMS criteria and objectives to the satisfaction of the City and DWER
- Detailed stormwater drainage design including final levels and dimensions for bioretention and flood storage areas
- Specific detailed information on structural and non-structural Best Management Practices to be implemented within each subdivision
- Final subdivision layout including final cut and fill levels, minor and major drainage layout, and overland flow paths
- Management of subdivision works including details of licence application for dewatering or dust suppression if required
- Updated POS landscaping design drawings which will include design contours, cross-sections, storage areas, plant species, fertiliser regimes and irrigation scheduling
- Detailed monitoring program for both groundwater and surface water monitoring including sampling locations
- Finalised implementation plan including roles and responsibilities of all parties involved.

8.2. Implementation plan

The proposed operation and maintenance program is outlined in Table 17 below.

Table 17: LWMS roles and responsibilities

Principle	Role	Responsibility	Timescale
Monitoring	Groundwater monitoring	The proponent	Quarterly groundwater levels and water quality monitoring of bores for a period of 3 years following practical completion, with a review after 18 months.
	Surface water monitoring	The proponent	Quarterly surface water levels and water quality monitoring for a period of 3 years following practical completion, with a review after 18 months.
Irrigation bore	Bore monitoring and maintenance	The proponent until POS handover. Bore to be serviced prior to pump handover to the City.	As per the bore licence conditions specified by DWER until handover to the City.
Subdivision management	Construction and site works management	The proponent	As required during construction until handover to the City.
	Waste and pollution management	The proponent	As required during construction until handover to the City.
	Erosion Control	The proponent	As required during construction.



Principle	Role	Responsibility	Timescale
POS and landscaped community areas	Maintenance of drainage infrastructure	The proponent	As specified within the POS design documentation until handover to City.
	Fertiliser application	The proponent	As specified within the POS design documentation until handover to City.
	Irrigation systems	The proponent	As specified within the POS design documentation until handover to City.

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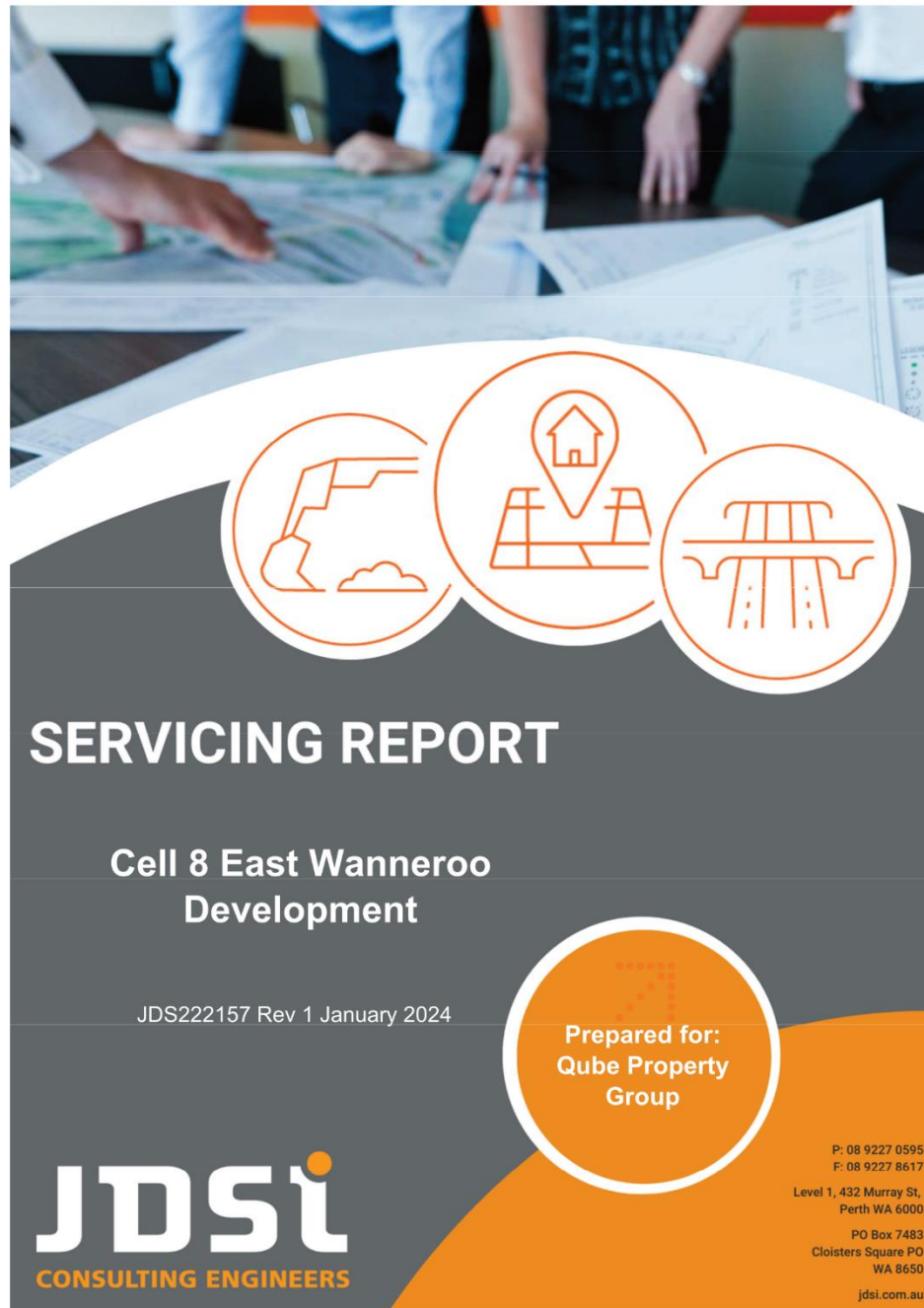




Attachment 2

Civil Servicing Report





SERVICING REPORT

Cell 8 East Wanneroo Development

JDS222157 Rev 1 January 2024

Prepared for:
Qube Property Group

JDSi
CONSULTING ENGINEERS

P: 08 9227 0595
F: 08 9227 8617
Level 1, 432 Murray St,
Perth WA 6000
PO Box 7483
Cloisters Square PO
WA 8650
jdsi.com.au

ENGINEERING SERVICING REPORT
Cell 8 East Wanneroo Development
JDS222157

JDSi
CONSULTING ENGINEERS

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DOCUMENT REVIEW				
Revision	Date Issued	Issue Type	Written By	Approved By
Rev A	14/08/23	Draft for Review	JDS	SF
Rev 0	4/12/23	Final Issue	JDS	SF
Rev 1	29/1/24	Final Issue – minor text amendments	JDS	SF

1 Executive Summary

JDSi Consulting Engineers has been engaged by Qube Property Group to provide an Engineering Servicing Report to support the East Wanneroo Precinct 8 Local Structure Plan and associated 'Lifting of Urban Deferment' under the Metropolitan Region Scheme (MRS), herein referred to as the Site. This report addresses the civil and services engineering elements relating to the proposed development. It is specifically targeted at the external land development and service authority requirements to facilitate the proposed development.

As further detailed in the report there are several recommendations for further action to progress the development, with regards to the civil infrastructure requirements. These are summarised below:

- Complete a detailed assessment to address all the key requirements of District Structure plan (DSP) into the desired development.
- Confirm final Water Corporation planning with regards to water supply & wastewater collection for the development.
- Check and confirm with NBN to confirm options for communications supply to the site.
- Confirm the western power requirements with regards to power supply for the development.

The above summary of recommendations is not exhaustive as there will be numerous actions required to achieve an approved design that meets industry and regulatory requirements for quality, sustainability and safety.

2 Key Objectives

The key objectives of this report are to:

- Review and analyse existing documentation associated with the site.
- Summarise any existing infrastructure assets within the vicinity of the site, including roads, drainage, and utility services.
- Provide commentary on any clearing and earthworks required within the site.
- Provide commentary on potential road upgrades and improvements required to facilitate access to the site.
- Summarise requirements for the design and construction of new public roads proposed as part of the development.
- Provide commentary on the overall stormwater drainage strategy for the proposed development.
- Summarise Water Corporation's requirements for sewer and water reticulation and supply to the site.
- Summarise Western Power's requirements for electrical reticulation and supply to the site.
- Summarise servicing and supply requirement for telecommunication and gas reticulation to the site.
- Provide commentary on any potential major infrastructure upgrades required to accommodate the proposed development.
- Summarise key engineering and servicing constraints and opportunities associated with the proposed development.

3 Introduction

Qube Property Group (the Client) have requested JDSi to provide an Engineering Servicing Report to support the East Wanneroo Precinct 8 Local Structure Plan and associated 'Lifting of Urban Deferment' under the Metropolitan Region Scheme (MRS)" (refer Figure 1 below). For the purposes of this report the site includes a count of 40 lots owned by different landowners, Western Australia Planning Commission and State of Western Australia.

Based on preliminary information provided by the Client, the Precinct 8 Structure plan (included in **Appendix A**) and corresponding Master plan, the development incorporates following yields.

- Approximately 2,500 dwellings
- 264 Ha of total Area
- Primary School and Public Open Space (POS)

This report covers the engineering infrastructure requirements to service the proposed development. JDSi have considered earthworks, roads, stormwater drainage, wastewater, potable water, and utility services with a particular emphasis on the existing service capacity and the potential infrastructure upgrades required to support the proposed development.

The report has been based on a desktop study of existing services information, aerial imagery, preliminary advice from the various service authorities, industry standards and policies and JDSi's in-house experience related to other developments in the area. The information is current as of August 2023 and may be subject to change as development progresses in the area.

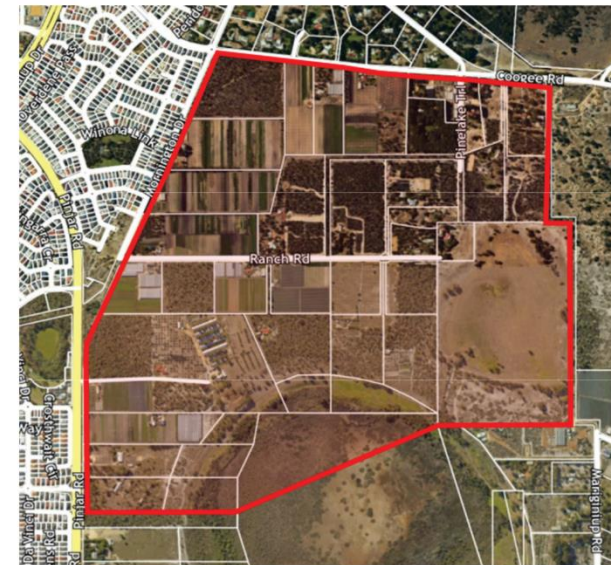


Figure 1: Site Location

4 Study Area

The Site is bounded by rural residential to the north (north of Coogee Road), undeveloped open area to the east, Mariginiup Lake to the south and existing residential to the west.

The Site consists of:

- Predominantly vacant land covered with agricultural crops and low-density residential dwellings.
- Vacant land with remnant vegetation throughout the Site.
- Existing Mariginiup Lake appears to predominantly facilitate a stormwater drainage function.

The Site is within the local authority of the City of Wanneroo. Refer to Figure 2 for extract of the East Wanneroo District Structure Plan showing the Precinct 8 area".

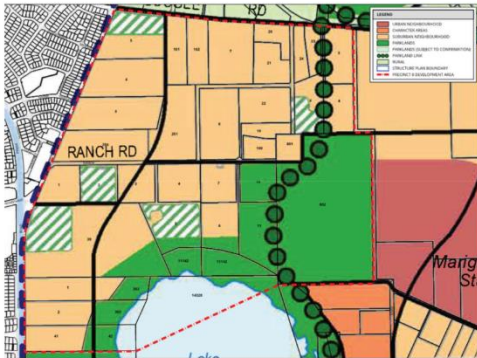


Figure 2: Precinct 8 East Wanneroo District Structure Plan

4.1 Topography

The Site has surface elevations ranging from approximately 45m – 65m AHD for the majority of the site, climbing to approximately 70m AHD along the Northern boundary where Coogee Road is located.

A lidar survey of the site has been undertaken by MNG on 10/01/23. A copy of the lidar survey is attached as **Appendix B**. Refer to Figure 3 below for the indicative topography of the Site.



Figure 3: Site Topography (Water Corporation EsiNET Data 2023)

4.2 Groundwater

Perth Groundwater Map (provided by the Department of Water and Environmental Regulation) indicates that the maximum groundwater level ranges from 39.0m AHD in the west to 44.0 AHD to the east. The Site varies from 2-3m separation in the west up to 15m separation between natural surface and the maximum groundwater in the central and eastern areas. Ongoing ground water monitoring of the Precinct 8 area has been occurring in accordance with DWER guidelines.

JDSi in coordination with Pentium Water have developed a preliminary earthworks model for the LWMS which provides confirmation of minimum separation to the groundwater levels. These earthworks models have also assisted Pentium Water determine the drainage catchments areas across the Site.

4.3 Geological Conditions

Mapping by the Geological Survey of Western Australia (1986) indicates that the surface geology for most of the site consists of Karakatta Sand which is brown sandy surface passing into bright yellow siliceous sand.

Site is described as low hilly to gently undulating terrain with yellow sand over limestone.

It is recommended that a site-specific investigation be carried out to further inform the civil design for the proposed development. This report should include, as a minimum, testing to confirm:

- Existing Soil Characteristics (PSD, Atterberg Limits, MMDD, soil profile).
- Pavement Design Parameters (CBP, Swell %).
- Bearing Capacities for retaining wall design.
- Site preparation and compaction recommendation.
- Drainage infiltration testing at specific locations to inform drainage basin sizing.

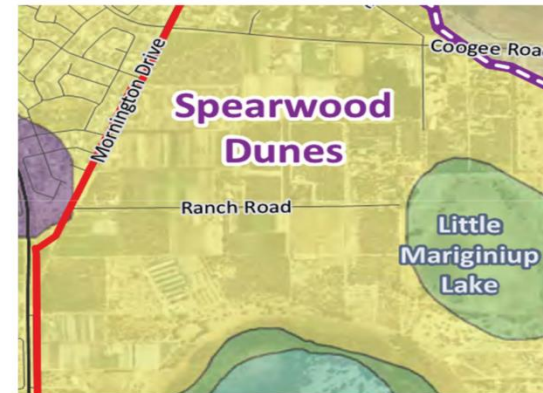


Figure 4: Geological Mapping (Geological Survey of Western Australia)

4.4 Acid Sulphate Soils

The Department of Water and Environmental Regulation (DWER) mapping indicates that there are no Acid Sulphate soils risk areas mapped over land identified for development within the Precinct 8 Local Structure Plan. But there are two other potential locations shown on DWER maps where there is High to moderate ASS risk. First is Lake Mariginiup and second is Little Lake Mariginiup. Both spots lie within existing Parks & Recreation reserves where no development is proposed. It is recommended that a high-level investigation into the occurrence of ASS should be included in a future geotechnical and environmental investigation to ensure any risks of encountering ASS are mitigated.

5 Bulk Earthworks

5.1 Bulk Earthworks

All earthworks will need to be undertaken in accordance with recommendations from a detailed Geotechnical Investigation and AS3798 - *Guidelines on earthworks for commercial and residential developments*. It is anticipated that the earthworks can be undertaken onsite utilising standard civil construction equipment.

The concept earthworks design, refer (**Appendix C**) has been undertaken to assist initial Structure Planning, sewer catchments and water management designs and has incorporated the following:

- A detailed Geotechnical Investigation, including any recommendations.
- The requirement to contain stormwater drainage onsite and applicable levels for this to be achieved.
- Drainage outfall levels for the stormwater drainage system and industry standard requirements for freeboard from the finished floor level to the 100-year flood level. This is subject to further advice provided by the hydrologist and will be verified during detailed design.
- The invert level of the existing gravity sewer mains that the development will discharge into.
- Interface and coordination with the existing levels of the adjacent road network, areas of retained vegetation, including allowances for vehicle and pedestrian access.
- Rationalisation of any required retaining walls.
- Interface and coordination with the existing structures on the site.

6 Roadworks

The site is largely occupied by undeveloped agricultural uses. The surrounding road network is under the control of the City of Wanneroo and as such all works on and abutting the public roads will be subject to their approval.

According to the latest Precinct 8 local Structure Plan a connecting road is provided from Pinjar Road to Ranch Road, south of the primary school. An east-west connection to the neighbouring Precinct 15 is provided to the north of Little Lake Mariginiup.

6.1 Existing Traffic Conditions

The Site is bounded on three sides by existing roads, namely:

- The Existing Coogee Road lies on the northern side of the development site and classified as the Local distributor road (Main Roads WA Road Hierarchy). The road is currently a single lane with two-way carriageway.
- Mornington Drive is on the western side of the development site and is also a Local distributor road single lane with a two-way carriageway. This road connects to Coogee Road with via a roundabout intersection which is at the north-western corner of the site. South of Mornington Road gets changed to Ranch Road and provides access to the residential lots.
- Pinjar Road is on the southwest side to the development site and is classified as a Distributor A road. The road is a double lane with two-way carriageways and connects to Joondalup Drive via a roundabout intersection.

6.2 Internal Proposed Roads Network

The role and function of the existing road network, and planned Precinct 8 road network, has been reviewed by PJA Traffic Engineering Consultants as part of the Precinct 8 Traffic Impact Assessment (TIA) supporting this Structure Plan. The details of roads will be included in the Traffic assessment report for further clarification. It should be noted that no proposed lots within the Precinct 8 Site will front Coogee Road.

7 Stormwater Drainage

Urban Water Management (UWM) is now a key part of any development process incorporating principles of integrating water and land use planning, considering all water sources in water planning, integrating water use and natural water processes and a total catchment integration of natural resource use and management (Ref. Stormwater Management Manual for Western Australia, DOW, April 2004 the State Water Strategy 2003, and the State Water Plan 2007).

Stormwater drainage management is a major component of an overall UWM strategy for which achievement of the principals of the plan may be facilitated through the application of Water Sensitive Urban Design (WSUD) techniques during planning, design, and construction of urban development projects. Objectives of WSUD include but are not limited to the following:

- Detention of stormwater rather than rapid conveyance to maintain predevelopment flows for quantity management.
- Use of vegetation for filtering purposes and nutrient stripping for quality management.
- Use of stormwater to conserve potable water; and
- Water efficient landscaping.

The precinct 8 local structure plan is also accompanied by an LWMS and ultimate detailed water management will be designed in accordance with City of Wanneroo design guidelines and DWER water sensitive urban design guidelines. As the City of Wanneroo will ultimately own and maintain all stormwater infrastructure the design and construction work will need to be undertaken in accordance with their guidelines and standards, as well as the Local Government Guidelines for Subdivisional Development (IPWEA). City of Wanneroo typically require:

Commercial Developments

- 1% AEP event to be retained on site.
- Pipework in adjoining streets to accommodate 10% AEP event.

Residential Developments

- 10% AEP event to be retained on site.
- Pipework in adjoining streets to accommodate 20% AEP event.

Stormwater management for the development will adopt principles of Water Sensitive Urban Design (WSUD) suited to the climatic and ground conditions, including:

- The design philosophy for the development site will need to demonstrate post development flows and volumes do not exceed pre-development flows.
- Suitable landscaping to prevent direct run-off from impervious surfaces to the existing drainage network or coastal area without suitable treatment.
- Detention storage areas provided where possible to reduce peak flow rates to the capacity of downstream facilities.
- Clear overland flow path for the 100year ARI event, with a minimum 300mm freeboard to habitable floors.
- Surface and groundwater quality will need to be maintained at predevelopment levels and improve the quality of water leaving the area, if possible.

The requirements of the stormwater drainage system and the wider terrestrial water management approaches will need to be approved by the City of Wanneroo through submission of an Urban Water Management Plan. It is recommended that a suitably qualified hydrologist is engaged to assist with the study and preparation of the Urban Water Management Plan.

8 Sewer Reticulation

The Water Corporation (WC) owns and maintains the sewerage reticulation system in the vicinity of the site. Any connection into this system will need to be designed, approved, and constructed in accordance with standard WC requirements.

Based on the WC EsiNET data there is an existing DN150 PVC gravity main running across the road at Mornington Drive along the west corner of the site and a DN225 PVC Gravity main running on the Mornington Drive across the road up to Mornington Drive and Coogee Road intersection.

The level of this connection should be confirmed by WC and verified as being suitable for the proposed development of the Site. Figure 5 depicts the Existing Sewer Reticulation adjacent to the Site.



Figure 5: Existing Sewer Layout (EsiNET)

Formal planning advice received from WC is summarised below. Refer to **Appendix D** for the full copy of the advice.

- Majority of the site area falls within an existing gravity catchment – the Pinjar Road Interim Wastewater Pump Station (WWPS) or PS A which has a design flow of 26.5 L/s. Therefore, the proposed subdivision areas that can be serviced via gravity sewer are planned to be serviced through this pump station. The balance of the site (eastern portion) will be serviced via a new WWPS (PS Z). This will pump to the west and connect into the gravity sewer network that connects to PS A.
- In addition to the proposed gravity sewer extensions (DN150 and DN225) it is expected there will be pump upgrades or reconfigurations to the existing Pinjar Road WWPS to accept additional flows.
- Discussions with WC's Headworks Delivery team regarding the funding and scheduling of these upgrades are to occur long before the commencement of the project.

Given this is adjacent to the existing sewer infrastructure and is considered to be frontal development, the existing spare capacity within the existing Pinjar Rd WWPS should be reserved for this Precinct.

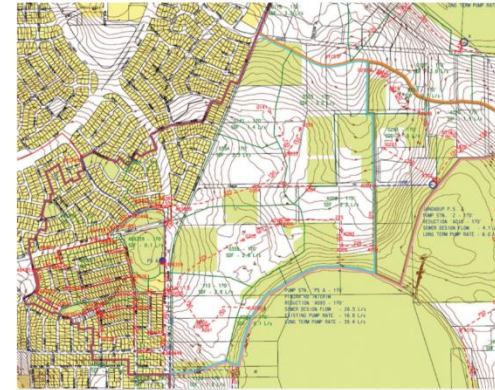


Figure 6: Water Corporation Wastewater Planning.

9 Water Reticulation

The Water Corporation (WC) owns and maintains the potable water reticulation system in the vicinity of the site. Any connection into this system will need to be designed, approved and constructed in accordance with standard WC requirements. It would be expected that a standard development condition addressing the above will be included on any WAPC approval.

Based on the WC EsiNET data, there is an existing 150P-12 water reticulation main running along the north side of Coogee Road and a 100P-12 water main located on the west side of Mornington Drive. A DN500 Steel main is also located on the western side of Mornington Drive which connects into the DN1000 Wanneroo Road – Yandella Promenade transfer main within Pinjar Road.

Appropriately sized water reticulation mains (DN100 - DN250) will need to be extended in a staged manner off the existing distribution mains that run along Pinjar Road (DN1000) and along Mornington Road (DN500).

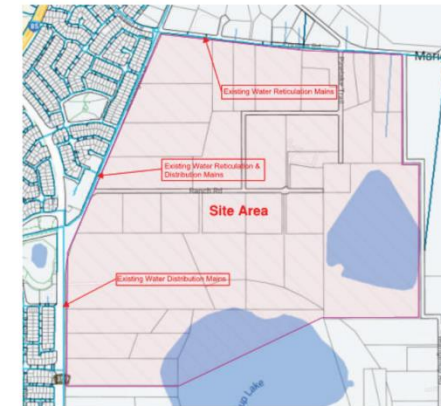


Figure 7: Existing Water Corporation surrounding water infrastructure (EsiNET)

To provide a potable water supply to the development, suitably qualified persons will be required to design the proposed water reticulation network and submit to the WC for approval. Applicable headworks charges will need to be paid by the Developer and these will be determined by the WC at the time of application.

All water main extensions required for the development site will be laid within the existing and proposed road reserves, on the correct alignment and in accordance with the Utility Providers Code of Practice and WC's Water Reticulation Pipelines DN250 and Smaller (DS63). These mains can then be used to provide potable water connections to each lot.

For formal planning advice received from Water Corporation refer to **Appendix C**.

10 Power Supply

Western Power (WP) owns and operates all electrical supply network assets within the development area and therefore all new electrical supply equipment and cables will need to be installed in accordance with WP, WAER (West Australian Electrical Requirements), AS3000 specifications and Standards.

The total load for the ultimate development has been estimated to be 13.5MVA and has been calculated using WP's recommended Design After Diversity Maximum Demand (DADMD). The estimated loads are summarised below.

Load Type	Volume	Load Allowance	kVA Allocated
Residential	2500 Dwellings	4.7kVA/dwelling	11,750 kVA
Primary School	1	250kVA	250 kVA
Community Space	24,580m ²	200kVA / Ha	500 kVA
POS	30	30kVA / space	900 kVA
Wastewater PS	1	100kVA	100 kVA
Total DADMD			13,500 kVA

The following advice is based on JDSi desktop studies and support information obtained from the WP NCMT (Network Capacity Mapping Tool) online database.

Existing HV Overhead and Underground network have been identified within the vicinity of the development, originating from the Wanneroo Zone Substation. Wanneroo Zone Substation is the existing bulk electricity supply with the closest point of connection to the development site, approximately 3km. Based on WP forecasts remaining capacity for 2028, it is estimated that 25-30MVA is available for this HV feeder for the Zone substation.

The nearest point of connection for the site is the identified HV overhead and underground network along Coogee Road, Mornington Road and Ranch Road.

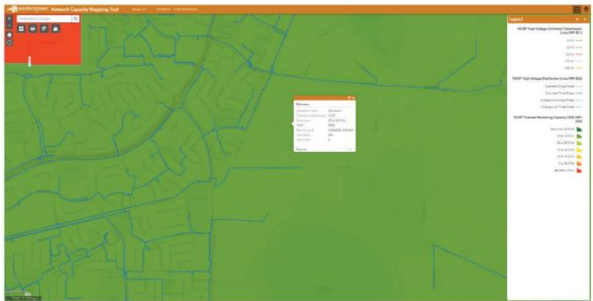


Figure 8: Surrounding Power Lines

Based on the estimated load of the ultimate development, the site will require several HV feeders to cater for the anticipated 13.5MA. WP's design philosophy is that a single dedicated feeder should only be loaded up to 8MVA.

The ultimate development is estimated to require a minimum of one 1MVA and twenty 630kVA transformers (1000kVA + 20 x 630kVA = 13,600kVA). Furthermore, the site required approximately thirteen high voltage switchgear kiosks to bring the HV power network into the subdivision.

Based on the above advice, it is very likely that the development will require WP power network reinforcement/augmentation. This will be identified and cost by WP, with the extent or works subject to network conditions at time of connection. Depending on the staging of the development, this may not be required immediately (ie at Stage 1).

Please note WP cannot reserve network capacity therefore the above advice is current as at the date of this report. Once the Development planning has been finalised it is recommended a formal Design Information Package (DIP) request is submitted to WP in order to progress the design of the first stage of the Development.

11 Gas

Dial Before You Dig (DBYD) information indicates that there is an existing DN90 PE HP gas main located on Mornington Drive abutting the west end of the site. It is likely that this will be insufficient to service the proposed development.

There is an existing 90PE at 350Kpa gas infrastructure in Mornington Drive as shown in Figure 10. Liaison with ATCO Gas is required to confirm whether this existing service is sufficient to service the proposed development.

DBYD notes this as a "Critical Asset" and therefore special controls are in place, including no works with 15m of the asset without ATCO Gas approval.

Reticulated gas is not considered to be an essential service and as such is generally not required as a condition of development. If the Developer wishes to connect to reticulated gas an extension to the nearest high-pressure main will be required. For commercial developments the cost of gas reticulation is typically borne by the Developer, however financial agreements can be arranged if gas usage is expected to be high.



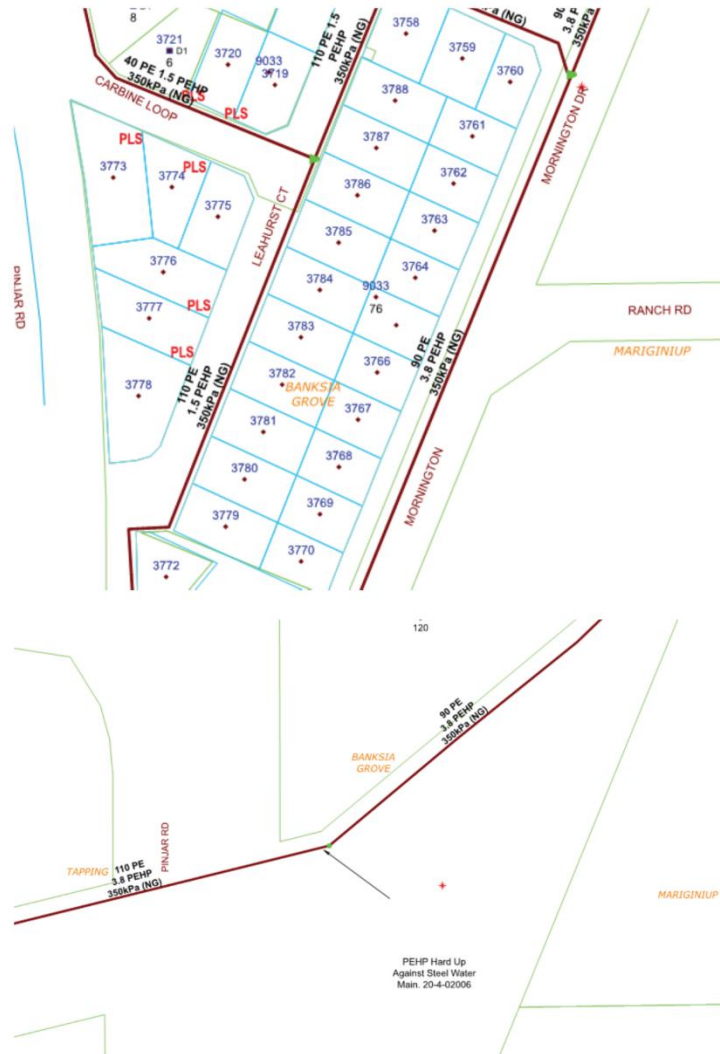


Figure 9: Existing Gas Infrastructure

12 Telecommunications

Dial Before You Dig (DBYD) information indicates existing communication infrastructure provided by Telstra and NBN is currently available along Pinjar Road, Mornington Drive, Coogee Road, Mariginiup Road, Ranch Road and Pinelake Trail.

An existing NBNC DN100 PVC below ground conduit runs along the east side of Pinjar Road and Mornington Drive, south of Ranch Road, south of Coogee Road, which service the existing lots within the site area.

An existing Telstra DN100 PVC below ground pipe runs along the east side of Mornington Drive and south of Coogee Road. There is also an existing Telstra DN50 PVC along south side of Ranch Road and Telstra DN35 PVC that runs along west side of Mariginiup Road in south-eastern part of the site.

JDSi anticipate the existing infrastructure on Mornington drive, Pinjar Road, Coogee Road and Ranch Road would serve as connection points for the overall development however this would need to be confirmed with NBNC at the time of making an application for connection and is dependent on the number of services required for the development.

General communication services for the Site will consist of the installation of a standard pit and pipe network in accordance with NBNC guidelines and standards for Single and Multiple Dwelling Units (SDUs & MDUs). The pit and pipe system, and any internal cable routes, will be funded by the Developer with NBNC funding the provision of installing cable into the Network Termination Device's (NTDs) or Communications Room located in the development. Due to the proximity of the existing communications infrastructure, it is not expected that significant service back haul would be required, however if it is this is a cost that will be borne by the Developer.

13 Disclaimer

JDSi have undertaken this assessment based on a desktop study and subsequently, assumptions have been made which, if incorrect, have potential to change the assessment and/or recommendations. Major cost implications exist through factors which cannot be assured at this time including upgrading and provision of utility services, WAPC conditions of development, Local Authority Scheme Requirements, ground conditions, timing of adjacent developments, etc.

While JDSi has taken all care in the preparation of the likely development requirements and has noted key assumptions, JDSi accepts no responsibility for the accuracy of this report and provides it only as an indicative summary of engineering requirements.

If any further information is required or should you wish to clarify any issue, please contact our office.

